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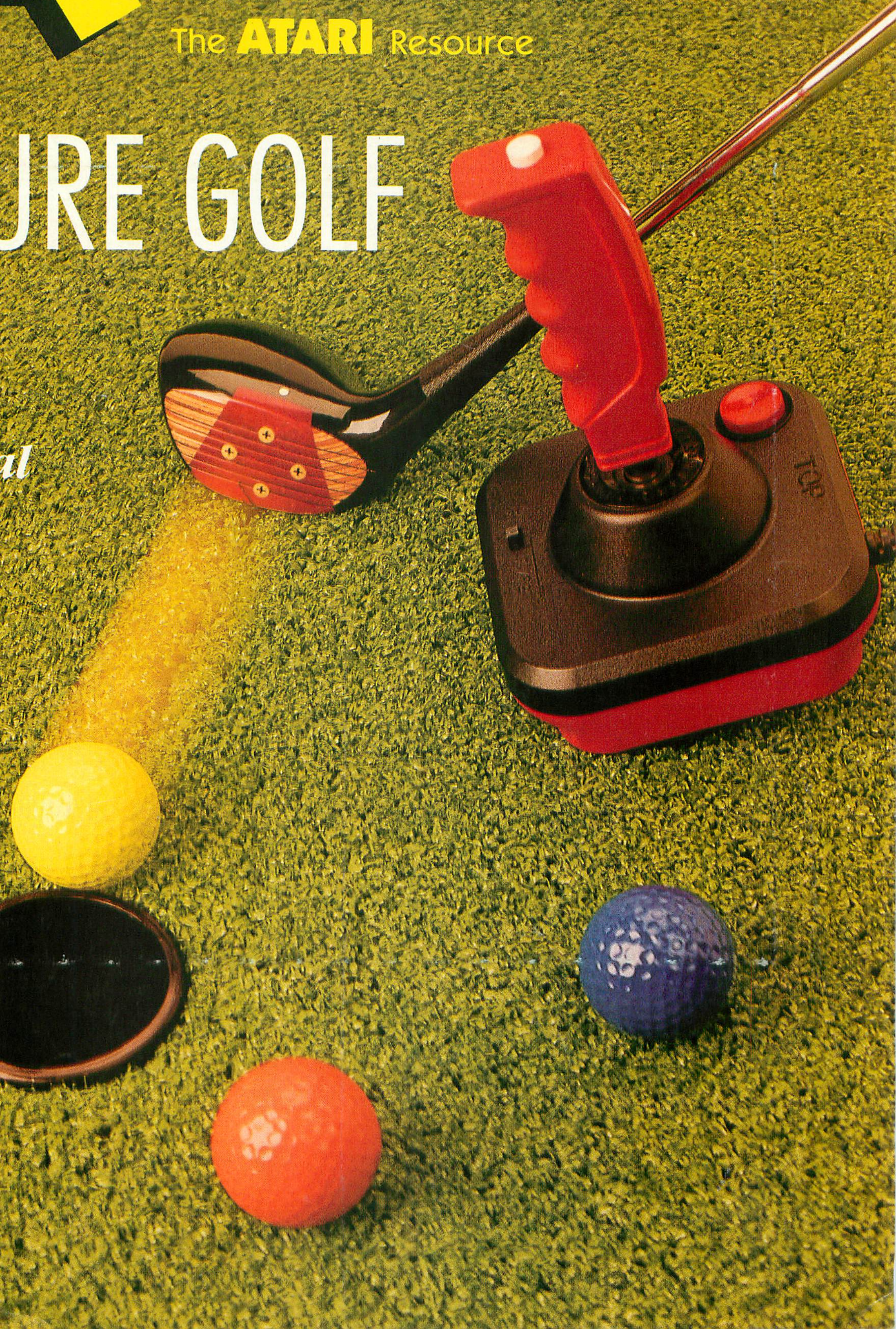
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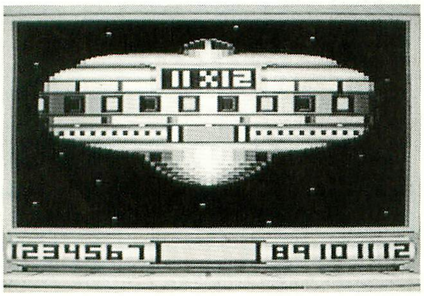
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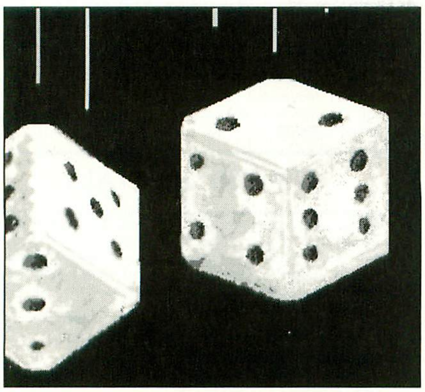
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BRAND NEW ITEMS

$199.95 The "BLACK BOX"!© $199.95

The **Black Box** is a device for your XL or 130XE computer that adds tremendous power to your 8-bit Atari. It has two buttons, two switches, and a set of dip switches visible from the outside. It plugs directly into the back of the 600XL, 800XL, and 130XE computers. Custom cases may be an optional expense. The **Black Box** performs three main tasks: interface to a SASI/SCSI bus device (hard disks), Parallel printer port, and a RS232 port. A fourth option, available soon, will be a floppy disk port, especially useful to XF-551 owners. The SASI/SCSI port provides the necessary signals for hooking up most common hard disks. You may partition your hard disk into as many drives as you wish; up to 9 can be accessed at at time. By pressing one of the buttons on the **Black Box**, you will enter the configuration menu, where you can re-assign drive numbers, etc. When you exit, you will be right back in the program you were running when the switch was pressed. Each hard disk can be write-protected. The Parallel Printer port will allow you to hook up any printer that uses the standard Centronics interface. As an option, you can use the computer's extra memory as a printer buffer, or order the **Black Box** with 64K of on-board RAM. You may assign printer number and line-feed options within the menu (for use with multiple printers). Another amazing feature of the **Black Box** is the built-in screen dump. By pressing a button (on the box), the contents of your screen will be dumped to your printer (you can define text or graphics modes with a switch)! The RS232 port supplies the full RS232 spec signals for connection to a modem, or another machine (for null-modeming). The handler for the **Black Box**' s modem port is built in and takes up NO memory! The port handles rates up to TRUE 19.2K BAUD! A future upgrade for the **Black Box** is a floppy disk interface board. This will allow the addition of up to four 5.25" or 3.5" mixtures of floppy drives to be used with the system. The drives will act like standard single/enhanced/double density disk drives, but MUCH faster! All drives will be Super Archiver compatible, and support up to 2 sides of 80 tracks. Along with this hardware upgrade will come software capable of reading, writing, and formatting disks in IBM's MS-DOS format and the Atari ST format, and allow you to transfer files between those disk formats and the Atari's format. In addition , a machine language monitor has been added to allow memory disassembly, memory/register changes, and more. The Price of the **Black Box** is $199.95 for the basic unit and $249.95 with 64K of RAM (for printer spooler) plus $8 for S/H/I. An optional custom **BLACK BOX** case is available for $39.95 extra. The Black Box is a product of Computer Software Services...Not the Black Box Corporation!

$199.95 The "MULTIPLEXER"!© $199.95

This device brings the power and flexibility of larger systems to your 8-bit. The **Multiplexer** is a device (actually a collection of modules) that allow up to 8 Ataris to read and write to the same drive (typically a hard disk), printer, and talk to each other. One "master" computer (any 8-bit) is equipped with the master **Multiplexer** interface. Then up to 8 "slave" computers can hook up to the master, each having their own slave interface. The "common" peripherals (things that are to be shared) are connected to the master computer. On each slave, all disk and printer I/O is routed through the master, so no drives are needed on them. The master computer can be configured in any manner you wish - you can for example have certain peripherals "local" to the slave, or routed to a different number on the master. Under development is a BBS system that will make full use of this device, allow ing up to 8 lines/users to be using the system at the same time! A mutiuser chat mode is a feature of this program, however, you do not NEED this program to run a BBS with the **Multiplexer** (but be warned that not all BBS programs will run concurrently). All slaves are independent, and do not need to have the same program running on them. This system is excellent for BBS SysOps, because you can be using your hard disk(s) while still running your BBS uninterrupted! Another example is in a classroom situation, or anywhere a disk needs to be shared by different people. This is an EXCELLENT programming/debugging tool as well! The **Multiplexer** price is $199.95 for a master and two slave units (plus $5 S/H/I). Additional slave units are $99.95 each.

$29.95 "XF551 ENHANCER!"© $29.95

The XF551 Atari drive is a fine product with one major flaw...It writes to side **TWO** of your floppy disks **BACKWARDS.** This causes read/write incompatibility problems with all other single sides drives made for Atari such as Indus, Trak, Rana, Percom, Astra, Atari 1050, Atari 810, etc. Add the **XF551 ENHANCER** to the new XF551 drive and your problems are over! This device will restore 100% compatibility while retaining original design qualities of Atari's super new drive. The **XF551 ENHANCER** is a **MUST** for all XF551 Owners. Installation is simple. Only $29.95 plus $4 S/H/I.

$99.95 The "POWER PLUS"!© MEMORY UPGRADE $99.95

(for 800XL'S and 130XE's only)

C.S.S. has made the "**Power Plus**"! memory upgrades available on an "unadvertised" basis to our regular patrons. These upgrades have become so popular we are now making them available to everyone! For those of you unfamiliar with "**Power Plus**"! upgrade, it is the most COMPATABLE upgrade available for the 800XL or 130 XE. All other upgrade kits have some degree of INCOMPATABILITY with certain software programs. C.S.S. studied this problem and developed the **POWER PLUS** upgrade which, to the best of our knowledge, appears to be 100% compatible. To upgrade a 130XE to 320K is only $99.95. To upgrade an 800XL to 320K is only $149.95 (circuitry from a 130XE is actually transplanted into the 800XL). Add $5 for S/H/I.

COMING SOON

The "**CARTRIDGE PORT EXPANDER**"! Allows up to 6 cartridges (including stackable types) to be switched on/off while in the EXPANDER. "CPE" is an embelical cable and can be placed anywhere! The "**SUPER E-BURNER**"! Programs E-Proms up to 1 MEG lightning fast! The "**FLOPPY DRIVE CONTROLLER**"! connects up to four 5 1/4" or 3 1/2" floppy drives to the Black Box. Increases read/write speed by 10 times faster! "**HD BACKUP PRO!**" Backs up hard drives to floppies, other HD's or possibly VCR's (with future product). Faster and more efficient than any other backup system!

BEST SELLERS

The new **SUPER ARCHIVER**, obsoletes all copying devices currently available for the **ATARI 1050**! It eliminates the need for Patches, **PDB** files, Computer Hardware, etc. Copies are exact duplicates of originals and will run on any drive; without exaggeration, the **SUPER ARCHIVER** is the most powerful **PROGRAMMING/COPYING** device available for the 1050! Installation consists of a plug-in chip and 6 simple solder connections. Software included. Features are:

- **TRUE DOUBLE DENSITY**
- **ULTRA-SPEED** read/write
- **FULLY AUTOMATIC COPYING**
- **SUPPORTS EXTRA MEMORY**
- **SCREEN DUMP** to printer
- **TOGGLE HEX/DEC DISPLAY**
- **SECTOR or TRACK TRACING**
- **AUTOMATIC DIAGNOSTICS**
- **DISPLAYS HIDDEN PROTECTION**
- **ADJUSTABLE/CUSTOM SKEWING**
- **AUTOMATIC SPEED COMPENSATION**
- **AUTOMATIC/PROGRAMMABLE**
- **PHANTOM SECTOR MAKER**
- **ARCHIVER/HAPPY ARCHIVER**
- **COMPATIBLE**
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- **BUILT-IN CUSTOM FORMATTER** up to 40 sectors/track
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Antic Wants Your Programs...Now!

For our most recent issues, perhaps 30% of the type-in programs and disk bonus software we published were the best of new submissions that arrived *after* the previous **Antic** already went to press.

In most categories, the **Antic** "bank" of good hobbyist-written Atari 8-bit programs is the lowest it has ever been. (Our biggest remaining "bank reserves" are in games and disk bonus software — but we can definitely use more of these too.)

Antic welcomes your submissions of *all types* of 8-bit Atari material, especially programs — and most especially programs that are useful, friendly, practical applications with wide appeal and *originality*. We pay at least $200-$300 for an average-size type-in program or disk bonus, with accompanying article. Payment is made at publication time, but these days there usually isn't much of a waiting period before we run your accepted work.

Traditionally, **Antic** programs and articles have been written by enthusiastic Atari hobbyists like you. If you've put some work into a good 8-bit program that you never quite got around to finishing, now's the time to wrap up that final debugging and error trapping, and send a copy of your work to **Antic**.

Also, your work will be welcome here if it was returned to you prior to publication by one of the former Atari magazines that went out of business. (At this time, Antic Publishing is producing the *only* U.S. magazines regularly covering Atari computers.)

Beyond this, **Antic** is in the market to buy magazine-with-disk rights to commercial software that is no longer on the market. We would like to use the Antic Disk to bring back some of the best 8-bit commercial releases.

There's nothing tricky about submitting a program to **Antic**. Just send your software and accompanying article on disk as well as in printout. Type-in programs must be in Atari BASIC, but a disk bonus can be in any language that has a runtime version.

We'll examine your submissions as soon as possible. Any material we don't use will be returned if you enclose a stamped, self-addressed envelope.

Nat Friedland

Nat Friedland
Editor, **Antic**

Desperately Seeking RAM

I recently bought a memory-upgraded 130XE. The store personnel could give me little or no information about the computer. Since then, I've been unable to get the information I need to properly utilize the upgrade. I even made contact with Dr. Brilliant, who wrote an article on memory upgrades for **Antic** (*Dr. Brilliant's Incredible Atari Brain Transplants*, November 1988.) I also tried using MyDOS 4.5 (advertised as being able to create RAMdisks with all 8-bit upgrades) to no avail.

The upgrade is a professional-looking board that's about 4 X 5 inches in size, and sits on top of the motherboard under the shielding. It shows the words "RAMpak XE Plus, Intellect Systems, Copyright 1987, Made in USA, Rev B," and there appear to be 32 256K chips on it for a total of 1 megabyte. There is a two-position switch on the back of the computer that disables BASIC in one position.

If anyone know about this board, or better yet, can put me in touch with the manufacturer, please let me know.

Jim Considine
Los Angeles, CA

Missing Sloop

I have had a lot of fun using the songs from the Antic Sound Processor (February/March 1990). I could not get the sample test run to work with D:SLOOPJB.ASP. I was able to use RPALMER.ASP, JACKSON.ASP and GBUSTERS.ASP. What happened?

Mike Gardner
Antioch, CA

Somehow, SLOOPJB.ASP didn't make it onto the disk, even though we had written the instructions based on that particular sample. As you figured out, you can load and play the files that are on the disk by substituting their names for the missing file. — ANTIC ED

XE Rules

It's time that influential publications such as **Antic** recognize that since 1985 the XE model computers have replaced the 800/400 and XL computers. **Antic** should refer to these Atari computers not as Atari 8-bits, a confusing, arbitrary label, but as Atari XE's. I could even see changing the magazine's full name to **Antic, The Atari XE Resource**. I for one have been a proud and enthusiastic Atari XE user for nine years and will continue to be for years to come.

Michael Current
Mt. Pleasant, MI

Anything but arbitrary, the term 8-bit describes how your computer hardware processes data — eight bits (one byte) at a time, as opposed to the sixteen bits an Atari ST works with. This is a standard term in the computer industry, used to refer to a class of computers.

Besides, if we added XE to our name, we'd risk alienating all those users dedicated to other machines. Among others, the 800, 800XL and even the 1200XL have their ardent fans, even if they're no longer in production. — ANTIC ED

Lonely Online

I'm 15, and own an Atari 800XL and a 400. Until my grandfather started getting me your magazine and disk, I was having one heck of a time finding software and info on my computer. I've got a modem, and would love to find someone to talk to online. Do you have any lists of people who frequently use their modems?

Adam Haynes
Marion, IN

Assuming you have a good telecommunications program, and depending on how much money you can afford to spend, there are various options open to you. Online services like CompuServe (800-848-8199 for voice information) and GEnie (800-638-9636) charge for their time, but they offer message bases, information and public domain software for a wide range of interest groups, including 8-bit Atari users. Closer to home, you're most likely to find people going online on an electronic bulletin board system (BBS). Check local computer stores and general computer newsletters for information on any such bulletin boards in your area. Thanks to the modem's magic, you can participate on most boards, even if they're run on other kinds of computers. Then, once you hook up with other telecommunications buffs, chances are you'll be able to track down some local Atari users. If some long distance charges are acceptable, various Atari users groups around the country have their own BBSs. — ANTIC ED

Beginners' Blues

Over the last year, we've gotten an increasing number of calls from new Atari users with some very basic questions about their computers. We've even had people who couldn't figure out how to run the Antic Monthly Disk — an apparently simple matter of putting the disk in drive 1 and turning the computer on, with BASIC. There's always a

HELP file on disk, but some people never even get that far. One problem is that XL/XE owners should NOT hold down [OPTION] when turning on the computer— the Atari BASIC "cartridge" is built into these computers, and holding down the [OPTION] key disables it.

To help new users, we ran the First-Time Atari Users Handbook in the February, 1988 Antic. Back issues are still available— see our ad in this magazine, or call (800) 234-7001 for credit-card orders.

*Another excellent guide, **Your Atari Computer** by Lon Poole gives very helpful information about using DOS, beginning BASIC programming, error messages, and more. It's so handy that we always keep it close at hand here in the Antic offices. Some mail-order companies still carry the book— check the ads in recent issues. The book can also be ordered direct from Osborne/McGraw-Hill, 2600 Tenth Street, Berkeley CA 94710. (ISBN 0-931988-65-9, $17.95. Credit card orders: (415) 548-2805.)*—ANTIC ED

Banner Help!

While looking through some back issues of **Antic** I came across the *World's Shortest Banner Program* in the December, 1988 Tech Tips. I tried typing it in, but can't get it to work. In particular, what is that funny plus-or-minus symbol in line 20? No matter what I type, I get an error message.

Earl Johnston
Port Angeles, WA

That character was a mistake— our typesetter's equipment interpreted the ^ character as a plus-or-minus sign, and we didn't catch the error in time. The character should have been a caret, used here to raise two to the power of I. That section of code should read:
BIN(I)=2^I— ANTIC ED

PowerPad Probe

I recently bought a used PowerPad by Chalk Board, along with MicroMaestro. I've found this unique device interesting to use on my 800XL. I'd be interested in ordering more software, and I'd also like to get information on how to read the PowerPad's input, so I can write my own software for it. Can you tell me if Chalk Board is still in business, and if so, how I can get in touch with them?

Andy Floyd
Minerva, OH

*We ran a review of the PowerPad in the September 1984 **Antic**. At that time, Chalk Board offered a Programmers Kit with extensive technical information. The company's long gone, but there might still be Programmers Kits around. Check with the mail order companies that advertise in **Antic**, or try a local users group. If anyone knows of a source of software for the PowerPad, let us know!*

***Antic** welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.*

*Send Letters to: **Antic I/O Board, 544 Second Street, San Francisco, CA 94107.***

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New Products notices are compiled by the ***Antic*** *staff from information provided by the products' manufacturers.*

Antic High Rollers

Dice-throwing excitement combines luck with strategy

By Frank Walters

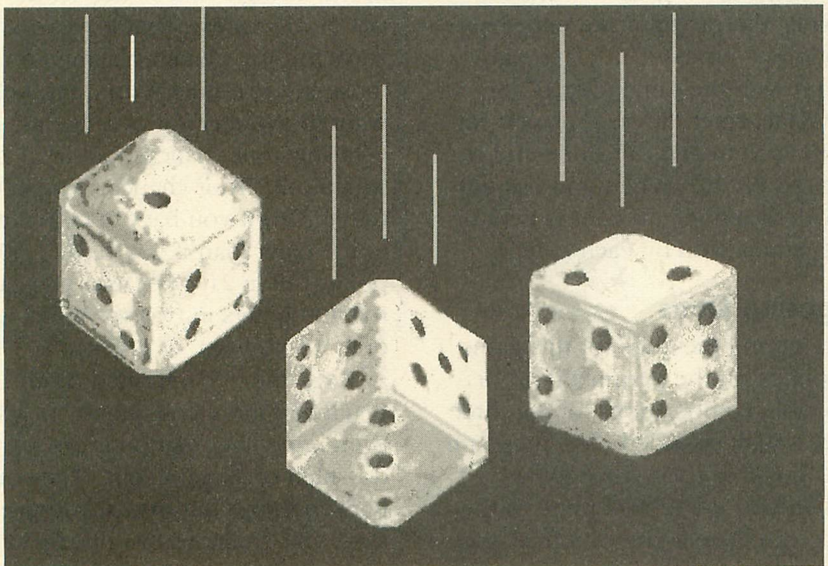


ILLUSTRATION BY WENDY JOHNSON

Test your luck and your nerve with this high-rolling BASIC game of dice for two to eight players — only one joystick required! Runs on Atari 8-bit computers with at least 48K and a disk drive

I first learned the dice game High Rollers when stationed overseas with the Air Force. Though fun and easy to learn, the game had one drawback. We had to keep score on a blackboard, and with a large number of players it wasn't easy to track everyone's score. I figured that High Rollers was a good candidate for conversion to a computer game, since the computer itself makes a great scorekeeper, easily displaying the running scores onscreen.

Get Rolling

Type in HIROLLER.BAS, Listing 1, check it with TYPO II and SAVE a copy to disk before you RUN it.

When you first RUN the game, you'll see the title screen and the program will ask if you want to see the Help screen for instructions. Then, you will be asked for the number of players. With four players or less, I recommend that each player take two turns to make the game more interesting. Four players would enter [8] for the number of players, then type in each name twice in succession. This gives each player two chances to score in each round.

In High Rollers you roll three dice at a time, counting any points made until one player reaches exactly 3,000 points. The player with the dice can choose to keep rolling (and risk going bust with a pointless roll), or pass the dice to the next player. When you pass the dice, you add your current points to the bank, where you can't lose them. If you bust, you lose any points not in the bank.

To play High Rollers on your Atari, you need to have a single joystick plugged into port 1. Push the joystick forward to roll the dice. Then, when you have enough points, press the joystick trigger to enter your points in the bank and "pass" the dice to the next player.

You get 100 points for any *ones* you roll, 50 points for *fives*. You get an additional 1,000 points for *three of a kind* — any kind. If you roll three ones, for instance, you'd get 1,300 points for that roll.

Reaching 3,000 points isn't as simple as it sounds. Before you can open your bank account, you must first roll a minimum of 500 points. Once you have a bank acount established, you can pass your turn and bank your points with as few as 50 current points. You also have to reach 3,000 points *exactly* — if you go over, you bust, and the next player gets a turn.

The computer randomly choses the first player, indicated onscreen with an arrow. Play then follows down the list of players. Prompts appear to tell players when to roll the dice, or when they have made an illegal move. When one player wins by reaching exactly 3,000 points, the program presents three options — press [START] to play again with the same players, [SELECT] to enter different players, or [OPTION] to end the game and return to BASIC. When you use the [START] option, a record is kept of the games won by each player.

Figuring Odds

Figuring the odds for this game depends on the permutations, or possible combinations, of the three dice. With six-sided dice, there are 216 possible rolls (6 x 6 x 6). When you roll a bust, none of the dice can have a one or a five, and you can't have a triplet (three of a kind) of any of the other numbers (2,3,4,6). You have four chances in six of rolling any of these numbers on a single die. If you multiply the number of chances of rolling one of these numbers on one die (4), by the chances on the next (4) and on the third (4), you get the odds of rolling without a one or a five appearing. 4 x 4 x 4 = 64 chances in 216.

These 64 chances include triplets, which must be subtracted. Each triplet is only one of the 216 possible combinations of the dice, so we subtract 1 for each of the non-scoring numbers. (64 - 4 = 60.) This means there are 60 ways to roll a non-scoring combination, out of 216 possible combinations. Your odds of scoring, then, are 156 in 216 (216 - 60 = 156).

All this presumes you have 1,700 points or less. If you have more points, you add the chance of going bust by exceeding 3,000 points. The closer your score gets to 3,000, the greater the chance of going bust before you get the points you need. For example, if you have 2,950 points, the only roll you can use is a single five — any more points, and you'll bust by going over.

Without boring you with arithmetic, a single five comes up 48 out of 216 times. That leaves 168 ways to bust. When playing for those last few hundred points, you want to avoid going over by increasing your chances to win in a single roll. Your chances are better (60 in 216) if you have 2900 points in the bank than if you have 2950 points (48 in 216) because you can roll 100 points in two ways, not just one. (Two fives, or one ace.)

Keep the odds in mind, and you'll win more consistently. However, remember that odds are the downfall of all gamblers. They only even things out over the long run. Over millions of rolls, the dice will follow the probabilities figured here, but in a single game luck still plays a major part. The most unlikely rolls can and will happen, even against the odds — but that's all part of the fun! ▲

Listing on page 37

*Frank Walters is a retired AF fighter pilot living in Panama City, Florida. He has been running an Atari BBS for five years. His previous programs for **Antic** include Lazy Loader (May 1985) and VCR Labeler from the May 1989 issue.*

Antic Music Transposer

Instant key changes for any Antic Music Processor song

By Joe Cabuk

Want to sing along, but the song's just not in your key? Now you can easily change the key or range of songs entered in the Antic Music Processor with Transposer and Shifter, two BASIC utility programs for the ever-popular AMP. These programs run on Atari 8-bit computers with at least 48K memory and disk drive.

I have really enjoyed using Antic Music Processor (AMP), the Super Disk Bonus program by Steven Lashower from the December 1988 and June 1989 issues of **Antic**. Entering songs in AMP is very easy, and since the program first came out I have stored many of my favorite tunes on disk.

Once you've entered a song, you can easily change the tempo or volume at which the song plays, but to change the key or pitch you'd essentially have to re-enter the song note by note. After using the Music Processor for a while, I decided to see if I could build a program to transpose the songs into new keys. Since the keys in music are all relative to each other, and the notes follow fixed patterns, I figured this task should be easy for the computer. Well, after some study in a few music texts, I was able to devise a scheme for transposing on the computer. The result was two programs, Transposer and Shifter. Transposer changes a song's key, while Shifter moves the pitch up or down an octave. Using these two tools, you can easily change the key or range of your AMP songs — for a more pleasing sound, or to put a song in the perfect range for a sing-along.

Getting Started

For the Transposer, type in Listing 1, TRANSPOZ.BAS, check it with TYPO II, and SAVE a copy to disk before you RUN it. For the octave Shifter, type in Listing 2, SHIFTER.BAS, check it with TYPO II, and SAVE a copy to disk.

When you RUN Transposer, it prompts you for the filename of the song you wish to transpose. Then, follow the prompts to transpose your song. You won't need any more musical knowledge than is necessary to enter the songs into AMP, but you do need to know how many sharps or flats are in the current key of the song to be transposed. (To find the old key, load the song into AMP and look at the song in the Editor. The KEY indicator at the bottom of the screen notes the number of sharps or flats.) You can enter sharps as either # or S, flats as either b or F.

Loading and transposing a song can take a long time, so be patient. Then, after transposing the song, SAVE the new version. Be sure to use a new filename. I use the key as a filename extension, e.g. D:COMESAIL.C, to keep each version clearly identified. Now you can run AMP as usual, and proceed normally to load and play the transposed music.

If you find the song is pitched considerably too high or low, you can use the Shifter to move the tune up or down an octave. The Shifter works very much like the Transposer. RUN Shifter, then fol-

low the prompts, and SAVE the shifted version. Again, I like to use extenders to keep the different versions straight. For shifted songs, I use "UP" or "DN", in addition to the key, as in D:COMESAIL.CDN.

Cracking the Code

Once I'd researched the musically technical problems of transposition music, the problem was to get the program to identify the notes stored by AMP. I used AtariWriter to pull a few song files onto the computer screen so I could look at the storage format. In the past, this technique has helped me learn how other programmers have stored data. Unfortunately, it didn't help much with AMP — all I got was a screen full of jumbled characters. (I later learned this was caused by the presence of "control characters" for up-down-left-right.)

Next, I tried having the computer print out the ASCII characters for the data stored in the AMP song files. BINGO! Using this technique, I was able to locate the beginning and end of each voice, and the key-signature data. Steven Lashower had used the ASCII characters from zero through 64 to store the musical notes from C in the first octave through F in the sixth octave. In addition, he uses the letter T for rests and Y for lyric advances.

Each note, rest, and lyric advance is stored in groups of three characters (each voice ends with three ASCII 255s). The actual note is the first item in each group of three characters. The other two characters in each group contain the note duration, and other information which does not change during the process of transposing a song.

Armed with this information, I wrote Transposer, which will correctly change the key of any AMP song. Then, I decided that I needed to be able to ensure that the transposed song would be centered on an octave which is pleasing to the ear, or easy to use for sing-alongs.

The Octave Shifter was an easy program to write. To change the octave, all the program had to do was shift the notes up or down by twelve steps per octave. I considered combining the two programs, or revising the Transposer so it would "center" each song around middle-C, but decided to leave the two separate so **Antic** readers can make their own improvements.

Program Take-Apart

Since both programs work with AMP song files, they share a number of program lines. For *very* long songs, you may need to reserve more memory in line 60 for the string MU$. (If your computer has too little memory, you can also reduce the amount of memory required by making MU$ smaller.) You can estimate the memory needed by taking the number of disk sectors used by the stored song and multiplying this number by 130. For a song filling 100 disk sectors you'd change the DIM statement for MU$ to 13000, for example.

In lines 130-260 the program gets the song file from your disk and stores the music characters in the string MU$. The End-of-File error tells the program when the entire song has been stored in MU$.

Lines 550-680 do the transposing. If a note is shifted to a value less than zero or more than 64, the program adds or subtracts twelve to keep all notes in the correct musical range for AMP. Notes that were originally at the extreme ends of AMP's range won't get lost, but may shift up or down an octave in relation to the rest of the tune.

NOTE: Transposer cannot correctly transpose data groups stored using the AMP NOTE command. If you transpose a song with such NOTEs, you will need to load the song into AMP and correct the NOTEs in the AMP editor.

Listing on page 38

---

*Joe Cabuk is a retired Air Force officer, living in Oak Ridge, Louisiana. He has owned Atari computers since 1984 and taught himself to program. This is his first article in **Antic**.*

SPECIAL DISK BONUS: FOUR AMP SONGS

For your musical entertainment, and to go with the Transposer and Shifter programs in this issue, we've included four Antic Music Processor (AMP) song files on disk. Transposer author Joe Cabuk sent in TRACES.AMP, a shorter song complete with lyrics that makes a good test file for the Transposer program. Peter Fries of Plano, Texas wrote BOLERO.AMP, which was a runner-up in our AMP song contest. Though we announced the winners back in the June 1989 issue, the size of the song (almost five minutes of music!) made it hard to fit on disk until now. JEDI.AMP brings a popular sci-fi theme to your Atari. Rounding out the disk, you'll find a familiar ballad, complete with lyrics on side B — ELEANOR.AMP.

You can modify any of these song files using the programs TRANSPOZ.BAS and SHIFTER.BAS, also on disk. However, to see your results — and hear the songs —you must have our popular *Antic Music Processor* program, which appeared in the June 1989 issue of **Antic**. From the AMP main menu you can Load your songs, then press [P] to play them back, or press [E] to see the notes in the editor.

Space Station Multiplication

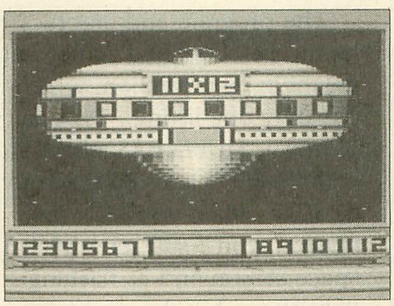
Flashy animation on disk bonus, or easy type-in version

By Bob Follett

Head for outer space to brush up on your times tables with Space Station Multiplication, an educational BASIC game with some spectacular high-tech graphics — especially on the disk bonus version. There's also a type-in version that's shorter and has no animation. Either version runs on Atari 8-bit computers with at least 48K memory and a disk drive.

Well, you can't say you weren't warned. Your father always told you not to cross through that sector of the galaxy. The gas station attendant even warned you that $2.37 worth of gas wasn't going to get you home even if you took that short cut.

Now you're low on fuel, and deep in dangerous Divisoron territory. The Divisorons refuse to study. Instead, they steal all their technology and they'd love to get their hands on your ship.



Fortunately, there's an Earth outpost in the neighborhood — Space Station Multiplication, manned exclusively by robots. To keep the Divisorons from using the station, a unique security system has been devised that takes advantage of the Divisorons' greatest weakness — they *never* learn their times tables.

Before any vessel docks with the station it must answer 12 multiplication problems. If you get less than eight answers right, the robots will ignore you, thinking that you must be a Divisoron. If you get eight to 10 correct answers, the robots will still deny you access, but just in case you're human they'll put on a little show of flashing lights.

Get 11 correct answers, and they'll allow you to dock your ship's shuttle craft. However, you'll be kept in protective custody until a maintenance ship comes by, and someone confirms that you are human. (Don't worry, these ships show up every six months or so.) Only if you get all 12 questions right will you be allowed to dock, load up with fuel, and return to your ship.

Getting Started

On this issue's Antic Disk, Space Station Multiplication consists of two files, MULTI.BAS and MULTI.PIC. The first is the actual BASIC program, which you can run directly from the Antic Disk Menu. The second file is used by the first, and contains pictures of the ship's view screen and shuttle docking, a keyboard decoder table and a machine-language display program to flip through the docking sequence. You cannot RUN this file separately. Also, to RUN MULTI.BAS from BASIC, you must have the file MULTI.PIC on the disk in drive 1.

The program and graphics had to be simplified somewhat for the type-in version, which has only one listing. Type in Listing 1, MULTI.BAS, check it with TYPO II and SAVE a copy to disk. When you RUN this version, you'll still see a slick space station and its flashing light show, but the docking sequence has been eliminated.

When the program begins, a menu screen appears. Use [SELECT] to pick a specific multiplication table from two to 12, or a MIX of multiplication problems. Press [OPTION] to choose a skill level. At the lowest levels, problems are given in numeric order — 2 X 1, 2 X 2, 2 X 3, and so on — with plenty of time to type the answers. Starting with level four, the problems come in random order. To help students improve their speed, the higher levels allow shorter time limits for each problem.

Once you've set all your options, press [START] to begin the quiz. You'll find yourself on the bridge of your spaceship, looking out the viewscreen at the space station. Each problem appears on the side of the ship. Use the number keys from 0 to 9 to enter your answers, and if you make a mistake use the [DELETE] key to correct your answer. Press [RETURN] when you're done.

If you answer correctly, station emits a high-pitched beep. Answer incorrectly, or fail to press [RETURN] before time is up, and you'll get a buzzer. Press [M] to quit the current set of problems and return to the menu screen.

Once you answer a complete set of 12 problems, the program displays the problems missed with the correct answers. You can then press [START] to see the space station's flashy reaction to your score — if you rated one. To skip the special effects, you can simply press [OPTION] to return to the options screen. ▲

Listing on page 39

Bob Follett is a computer science major living in Billerica, MA. A member of the Fort Devens Computer Club, he's been using his 8-bit Atari for five years.

Collapsing Deck

Solitaire game that's simple to play, but tough to win

By Allen Miller

Match suits and numbers in this unusual game of solitaire. The rules are simple, but you'll find that winning is a challenge. This BASIC program will run on any 8-bit Atari with at least 48K and a disk drive

Last fall a friend showed me a public domain game on a PC-compatible. He was fascinated by it, and wondered if it was available for his Commodore. I didn't know about the Commodore, but decided to try duplicating the game on my Atari. Thus, Collapsing Deck for the 8-bit Atari was born. I wrote the game in Atari BASIC — and gave my friend a copy to translate into Commodore BASIC.

This solitaire game is played with a standard 52-card deck. the object is to spread out a deck of 52 cards and then reduce the spread to one stack. When you find cards with matching suits or face values, either next to each other or three places apart, you move the back card on top of its match. It's not easy — I've only succeeded once. Fortunately, the rules are simple, and the program keeps a menu on-screen to help you remember the moves.

Getting Started

Type in COLLDECK.BAS, Listing 1, check it with TYPO II and SAVE a copy to disk before you RUN the game.

The computer first shuffles the cards, exposes two cards, and places the cursor under the last card. You then choose from the Command Menu at the bottom of the screen:

1 BACK ONE — Match the card above the cursor with the one to the left.

3 BACK THREE — Match the card above the cursor with the third card to the left.

N NEXT CARD — Expose the next card from the deck.

A ALL CARDS — Expose all cards from the deck.

E END GAME — Stop play and show score.

L LAST CARD — Move cursor to the last card exposed.

< MOVE LEFT — Move cursor one space left.

> MOVE RIGHT — Move cursor one space right.

In addition, the display shows you the number of cards left unexposed in the deck.

Once you've gotten the deck collapsed down as far as you think it will go, press [E] to end the game and see your score. If you have a play left, the program tells you to check your cards and returns you to the game. If there are no more plays, the computer will tell you how you did, and offer to play again.

Listing on page 41

An "eight-bitter" since 1983, Allen Miller is over forty and a manager in a maintenance department for an industrial plant near Cincinnati. He has an MBA and a BS in Physics (which he earned B.C. — "Before Calculators").

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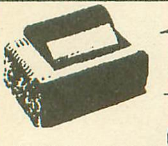
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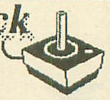
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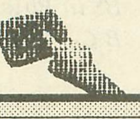
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BASIC SPEEDUPS CLEANUPS & MEMORY BOOSTERS

Speed up your programs and streamline your code with these tips and hints for intermediate (and advanced beginner) BASIC programmers.

By Greg Vozzo

Tips and tricks (some fairly drastic) for turbocharging your programs

Atari BASIC (Beginner's All-Purpose Symbolic Instruction Code) is perhaps the most well-known and easy-to-use language available for the Atari. Its advantages include a versatile math package, English-related commands such as PRINT, GOTO, and REM, and good support of many external peripheral devices (disk drives, printers, monitors, etc.). For XL and XE owners, it has the distinct advantage of being built right into the computer. However, it has two notable disadvantages— it's slow, and programs take up a lot of space in memory. For many large projects, Atari BASIC is not the ideal language to work with. Still, there are ways to get programs to run faster and take up less memory.

You'll have to consider what your particular program needs, of course. Some of these tips have drawbacks, or may seem contradictory. Using variable names instead of often-used numerical constants saves memory space, but make the program slower. Some techniques used to save memory, such as removing REM statements or shortening variable names, for instance, can result in almost unreadable programs. Always work with backups, just in case something goes wrong while you're "improving" that special program.

Less Memory

Once you finish a program, there are ways to break it down to consume less memory. First, remove any REM statements. REMarks take up considerable space, and should not be needed once the program works properly. Make sure, however, that none of your GOTOs or GOSUBs branch to lines containing only REM statements — sloppy programming in any case. (*If you plan to share your*

program with other programmers, or even submit it to Antic, it's a good idea to leave in at least a few essential REM statements to make customizing or debugging easier. — ANTIC ED)

Try putting as many statements as possible on a program line. Often, a programmer can compress two or more program lines into one this way. Some ways to do this are putting as many elements within a DATA statement as can be allowed by the computer and chaining PRINT commands together. Also, use ?, not PRINT. This doesn't save memory, but does save space on a program line.

You can also change IF...THEN GOTO/GOSUB's to ON...GOTO/GOSUB's. Lines like:

```
110 PRINT A:IF A=2 THEN 1000
120 IF A=1 THEN GOSUB 110
130 GOTO 20
```

can become:

```
110 ? A:ON A=2 GOTO 1000:ON A GOSUB 110:GOTO 20
```

Put operations used several times in different places in the program in subroutines. Some examples of such operations are mathematical functions, FOR/NEXT loops that act as a pause, and statements that print a commonly-used message to the screen. However, avoid using subroutines that are only accessed once. Change them to in-line code.

Chain programs. A "loader" program could be used to set memory locations, display lists, character sets, interrupts, or perhaps a title screen, and then RUN the main program — erasing the loader from memory in the process.

Instead of using GOTO to go to the first line in the program, use RUN.

Don't use SETCOLOR to alter the screen color registers. Use an equivalent POKE command instead, determined with the following formula: SETCOLOR A,B,C equals POKE 708+A,B*16+C

Use variables in place of numerical constants used often by a program. Examples:

```
N1=1:N2=2:N3=N1+N2
```

Keep the names of strings, variables, and arrays short.

If a lot of variables are set at the same point in a program, use READ/DATA to initialize them. For example:

```
READ A,B,X,Y,NUM,PL,SHIP:
DATA 0,1,14,8,10,1,5
```

Numerical constants take up a lot of memory. The following are some common situations in which a change can be made for the better.

```
IF N=0... becomes IF NOT N...
IF A>0... becomes IF A...
IF X<>0.. becomes IF X...
ON A GOTO 100,200,300,400...
becomes GOTO A*100
```

Use characters in place of decimal DATA when possible (if the number of elements in the DATA statement(s) is not small, and the numerical range used is 0-255). Allocate a string to read a whole line of such DATA with one simple command. Then, if necessary, use a FOR/NEXT loop to transfer the elements from the beginning of the string to the end.

If the elements applied to one-dimensional arrays fall between 0 and 255, replace the array with a string, as with the above tip.

Use strings in place of commonly-used text. Then, whenever it's necessary to print this text, just print the string.

Whenever possible, avoid using program-reserved memory space when storing flags, variables, and machine-language subroutines in unused memory. If a section of a RAM-resident character set is not being used, use that space. Page six (1536-1791) is always free. Finally, there are some sections of the DOS file management program (begins at memory location 1792) that may not be needed. See "Past Page Six" on page 90 of the April, 1984 issue of **Antic** for a list of these sections.

Use cursor control characters within text where possible in place of close-quotes and POSITION commands. This way, more space will be saved, and more text strings can be chained together.

Use this simplified format of a string if a large field is to be filled with the same character: A$="X":A$(200)=A$:A$(2)=A$ This example fills the first 200 bytes in A$ with X's.

You can insert code into the program that will delete those lines and routines the program only uses once. This can be hazardous, and you must be sure to place the code so it will be executed *after* the lines to be deleted. This procedure is done with the forced-read method, described as follows:

Clear the text screen.

Once it's finished, you can break down your program to consume less memory.

Along the left margin, display all of the line numbers that are to be deleted.

Reserve about three lines at the top of the screen.

At the bottom of your list, have printed: POKE 842,12:CONT (or replace CONT with a GOTO statement).

POSITION the cursor at the top left corner of the screen, and execute within the program: POKE 842,13:STOP

With these techniques you should end up with a shorter, faster, complete and error free program.

Repeat the procedure if more lines need to be deleted.

Finally, once you have observed all of these guidelines, LIST the program to disk, cassette, or RAMdisk. Type NEW, then ENTER the program back. Now SAVE it. This process clears the memory of any old variable names no longer in use. Since the process is a slow one, I recommend using a RAMdisk if you have one. (If you use DOS 2.5 with a 130XE computer, the file RAMDISK.COM will install one as drive 8).

Improving Speed

Many programs require speed, and with a relatively slow language like BASIC, maintaining speed can be difficult and crucial. Here are a few ways to get your BASIC program running faster:

Place the most crucial subroutines and loops at the beginning of the program. When BASIC looks for a line in a GOTO or GOSUB call, it starts at the top. By placing speed-dependent segments at the start, BASIC can spend less time looking for your code and more time executing it.

Turn off the screen display whenever possible. One way to do this is with POKE 559,0.

Use a RAMdisk, if you have one, for extra-fast storage and retrieval. This works both for data files and for programs you want to chain for less memory consumption.

Whenever possible, use POKE and PEEK equivalents for commands such as SETCOLOR, SOUND, STICK, STRIG, PADDLE, and PTRIG. *(COMPUTE!'s **Mapping the Atari** is an excellent source for such equivalents – see excerpts running in **Antic** (August 1989 through December 1988/January 1990 issues.* – ANTIC ED)

Mathematical operations tend to be slow. Make your mathematical functions as efficient as possible. Simplify complex functions wherever possible. One example is the exponent function (^). It can sometimes be replaced with a series of multiplications. For example, N^5 becomes N * N * N * N * N.

While variables are good for saving memory space, they slow down the program. Replace them with numerical constants, if possible.

Break down short FOR/NEXT loops into step-by-step code. For example:

```
FOR I=0 TO 3:SOUND
I,0,0,0:NEXT I
```

becomes

```
SOUND 0,0,0,0:SOUND
1,0,0,0:SOUND 2,0,0,0:SOUND
3,0,0,0
```

Store player-missile graphics in strings. Use a shorter display list, if possible. To do this, you must have a good understanding of what a display list is and how it works. Simply use and reuse lines of screen memory, and if any line of the display will never be used, skip over it with a blank scan line, or group of blank scan lines. This way, less processing is spent on the screen display, and the screen memory left over can be used for other purposes, such as alternate display lists and machine language subroutines.

One thing many programmers like to do is insert machine-language subroutines (called with a USR command). These offer the maximum speed of the machine, and can be used in anything from interrupt generating to complicated, speedy, and precise graphics management. Their purposes are up to you.

Once your program is up to speed, recode it. Make it compact, clean, and fast. Discard anything unnecessary, and keep the different segments of code in an efficient arrangement, so that the speed-dependent code is at the program's beginning, and the code that doesn't rely on speed resides at the very end.

If you apply these techniques properly and neatly, you should end up with a shorter, faster, complete and error-free program. However, make sure the program works before you recode it. Once you remove all those REM statements and shorten all your variable names, for instance, you may find it hard to debug your own program! ▲

Greg Vozzo is a longtime Atari 8-bit programmer from Brightwaters, New York.

FORE!

MINIATURE GOLF PLUS

This issue's Super Disk Bonus was a hit commercial game. All 8-bit duffers will enjoy the flashy mini-golf challenge — including a construction set for building your own customized holes.

By David Plotkin



Miniature Golf has always been one of my favorite games. Some years ago, I wrote an original type-in version for the Atari 8-bit that was published in the July 1985 **Antic**, and then had this greatly expanded and enhanced version published by XLent Software. Now

Antic brings you this complete commercial program with over 30 holes on disk — and an easy-to-use construction set to help you build your own exotic holes. So settle down and have some fun with as many as seven of your friends.

Getting Started

You'll find Miniature Golf Plus on Side B of your Antic Monthly Disk, ready to run. Just turn the disk over so the back side is up, and insert it in drive 1. Turn your computer off, remove all cartridges (XL/XE owners hold down [OPTION]), and turn your Atari on again. Miniature Golf Plus will load and run automatically, presenting you with the Main Menu with its three choices — Play Miniature Golf, Construction Set or Initiatilize a disk.

If you pick choice number 1, Play Miniature Golf, the title screen will greet you with flashing lights. Press the [START] key to continue, then enter the number of players per round of golf. Up to eight players can play, though with that many the game can go on for quite a while. You also enter the name of each player, with up to 10 letters each. When the last player's name has been entered, the game begins.

To get you started, we've included more than 30 holes on the disk. A message window will appear at the bottom of the screen. You can start the game at hole number 1, or move the joystick left or right to start at a different hole. Choose the hole by pressing the fire button. Play starts at the selected hole, and continues through to the last hole on the disk.

You view the miniature golf course from above. The club looks like a block with the corner missing — this missing corner is the part of the club that strikes the ball, which appears on the course as a little white point. You use the club to knock the ball into the hole, a somewhat blocky purple circle. The object, as in any golf game, is to complete the course in the fewest number of strokes.

To aim your shot, use the joystick. Guide the club to the desired position on the field — the ball will move in a straight line in the direction opposite to the club. When the club is in position, press the joystick trigger to swing the club. The further the club is from the ball, the harder it hits. Just as in regular miniature golf, you may not be able to get enough clear-



ance to hit the ball as hard as you like or in the direction you would prefer. Experiment with hitting the ball from another direction and letting it bounce off a wall or other objects on the course.

Players take turns at every hole. Each player continues to play until the ball goes into the hole. Play then passes to the next player. If you really botch the shot and your opponents will allow it, you can press the [START] button and replay that shot. It won't count against you. The current player's name, total score, hole score, and the current hole number are displayed in the red window at the bottom of the screen. If you wish to see everyone's score, press the [SELECT] button. Return to play by pressing [SELECT] again. To abort a game in progress, press the [OPTION] button to return to the main menu.

The game ends when everyone has played the last hole. A scoreboard displays all the scores, with the lowest score indicated (the lowest score wins the game). If you wish, you can play the course again.

Construction Set

The Construction Set lets you build your own holes to play on. It shouldn't be too long before you master the holes included with the game, but with a little imagination, you can keep constructing more challenging holes.

To get started, you *must* have an initialized data disk. (Don't initialize the Antic Monthly Disk — you'll lose the holes already there.) To initialize your disk, choose option 3 from the Main Menu screen. Remove your Miniature Golf Plus disk from the drive and replace it with a blank disk. Prompts will lead you through the next steps. If you are using a formatted disk, press [START] to initialize it. Initialization will only take a matter of seconds, as a special file is written to the disk. Be careful not to re-initialize your data disk — If you do, the program will no longer be able to access any of the holes on the disk.

If you are using an unformatted disk press the [ESC] key to format and initialize the disk. (Remember, any time a disk is formatted everything previously recorded on it will be erased.)

Now remove the initialized disk and put the Miniature Golf Plus disk back in the drive. Press the [START] button and you will return to the main menu.

Once you have your initialized disk, you're ready to pick the Construction Set option, number 2, from the Main Menu screen. A

message will tell you to remove the Miniature Golf Disk from the drive and put in your data disk — the one initialized in the previous step. Once you have done that, you are ready to start designing your own course.

(If you get an error message at this point, replace the program disk and turn your computer off and on again to reboot — and make sure you boot *without* BASIC. XL/XE owners must hold down [OPTION] when they turn their computers on, to disable the built-in BASIC. The Construction Set in particular needs the memory space that Atari BASIC uses.)

You don't have to design a complete course in a single session. You can save the individual holes as you finish them, then come back to create more later. Be careful not to reinitialize the disk, however, or you'll lose your finished holes.

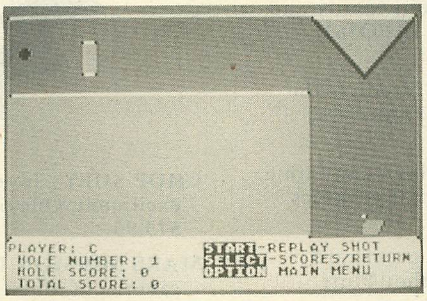
Once you've created some new holes, you'll want to try them out. To test your new course, use the Quit option to return to the Miniature Golf Main Menu and choose to Play Miniature Golf. Wait for the game to load — and then insert the data disk when the program asks for the number of players. After you enter the players' names, the program will check your disk for the number of holes available, and let you choose a hole on which to start play as before.

Course Construction

The Construction Set provides plenty of self-explanatory menus from which you choose your options. Using the joystick, you position the colored cursor to highlight the desired option, then press the joystick button to make the selection. Depending on your selection, further instructions may then appear to tell you what to do next.

The Construction Set's main menu has five items — Quit, Save, Edit, Delete and New. Quit returns you to the Main Menu screen which appeared when you first started the game. Save lets you save as many as 60 holes on a single disk. Of course, you might not want to have so many holes on one disk, since whenever you play Miniature Golf Plus the game continues until you play the last hole on the disk. Instead, you can make several smaller courses, but each new course must be on a separate disk.

Edit lets you edit a hole. If there



You can play over 30 holes on disk—or make your own.

are already holes on the disk, the program will tell you how many there are, and ask you for the number of the hole you want to edit. Move the joystick to change the number, then press the joystick button when you reach the number of the hole. If the hole already exists, the editor will load it from disk. To create a new hole, select the highest number offered.

Once you choose the hole you want to Edit, the Edit Shape Selection Menu appears at the bottom of the screen. This menu consists of choices for all the shapes you can put on the screen, as well as an option to return to the main menu. Except for the Hole/Ball and Barrier selections, pictures beside the various options show the shapes you can create. To select a shape, move the colored cursor to the shape you want and press the fire button.

After selecting a shape, you can choose the location and size of the shape, following the prompts at the bottom of the screen. When you are done working with the particular shape, you will be returned to the Shape Selection Menu.

Shape Selection Menu

The Shape Selection Menu has nine selections — Hole/Ball, Down Triangle, Up Triangle, Right Triangle, Left Triangle, Rectangle, Barrier, Diagonal Line and Main Menu. You can build just about anything you need on a miniature golf course using these shapes. To select an object, just move the cursor around using the joystick and make a choice by pressing the joystick button. Instructions will appear at the bottom of the screen to guide you in placing your objects.

With Hole/Ball you position the hole and the starting location of the ball. You first place the hole by moving the cursor to the hole position and pressing the joystick button. Next, you locate the ball's starting position the same way. To adjust either the hole or ball position at a later time, simply reselect this option.

The various triangles (Down, Up, Left and Right) look just like their pictures on the Shape Selection Menu. When you select one of these shapes, you will see a dot which you control with your joystick. Prompts at the bottom of the screen tell you which of the triangle's points to mark onscreen. For the Down Triangle, you move the dot to indicate the position of the triangle's upper left point, press the joystick button, then follow the same procedure for the upper right point. For the Up Triangle, you mark the lower left and right points. For the Right Triangle, you first place the upper left and then the lower left points, and for the Left Triangle you place the upper and lower right points.

Once the two points have been marked, the computer will draw the

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rest of the triangle. If you placed your points so that the triangle will be drawn off the screen, the computer will ignore your points and warn you that the screen boundaries were exceeded. This will not hurt your hole data or the construction of the hole. After the triangle has been drawn, you will be asked whether you want to draw more of that same shape or return to the Shape Selection Menu. Make your choice with the joystick and press the joystick button.

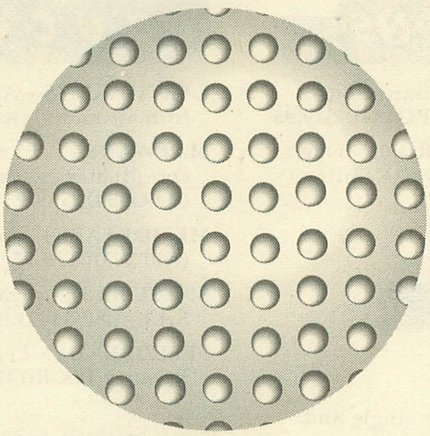
To position the Rectangle on the screen, select the upper left corner followed by the (diagonally opposite) lower right corner.

The Barrier option lets you place (or remove) a moving rectangular barrier on the playing field. The barrier only moves left and right, between the limits you select with the joystick. You also set the speed of movement, moving the joystick up and down to change the speed. The barrier actually moves back and forth at the selected speed, letting you decide what speed you like.

You position the Diagonal Line by specifying the two ends of the line. Move the joystick to select the higher end first. Press the joystick button to set that point, then move the dot-cursor down and to the right or left to choose the other endpoint. Press the joystick button again and the diagonal line will be drawn.

Deleting Mistakes

To remove a shape, you must first return to the main Construction Set menu, and choose Delete. This selection brings up the Delete menu with five choices — Cancel, Last, All, Choice and Clear. Since it may not be clear what each of these options do, a one-line explanation will appear at the bottom of the screen when you highlight an option. Pick Cancel to return to the Construction Set Main Menu without deleting anything.



With Last you can delete the last of any particular shape placed on the board. When you select Last, you are returned to the Shape Selection Menu, where you can pick which shape to delete. The last object of that shape placed on the screen will be removed. For example, picking RT TRIANGLE will delete the last right-facing triangle you placed.

The option All deletes all of a particular shape. Again, you go to the Shape Selection Menu. Pick which shape you want to work with. For example, if you pick RECTANGLE, then all the rectangles will be removed.

NOTE: If you pick Last or All by accident, picking Hole/Ball, Barrier, or Main menu from the Shape Selection Menu will return you to the main construction set menu without doing any harm. To remove a barrier, select Barrier from the Shape Selection Menu and choose "Remove Barrier" at the prompt.

The Choice option allows you to selectively remove shapes. Selecting Choice returns you to the Shape Selection Menu. Once again, selecting Hole/Ball, Barrier or Main menu will return you to the main construction set without doing any harm. Selecting any other shape puts the words "Shape Number" in the text window at the bottom of the screen. Use your joystick to select the shape number you want. As you move through the shape numbers, a flashing point on the screen will indicate the shape which will be deleted. Press the button to delete the shape indicated. To exit without deleting anything, simply pick shape number 0 and press the joystick button to return to the Construction Set main menu.

Clear erases everything on the screen, or you can use the last option on the Construction Set Main Menu, New. Normally the only way to move on to the next hole is by saving the hole you are currently working on. However, New lets you escape if you are editing a hole and decide that the hole is worthless — not worth saving. The New option will clear the screen and return you to the main menu to let you reenter hole data from disk or start a new hole. New can also be used to retrieve holes already saved to disk.

Program Notes

If you look at the directory of Side B from DOS (on Side A of your Antic Monthly Disk) you'll see that many files make up Miniature Golf Plus, which was written with OSS/ICD's BASIC XL. The smaller numbered files (H1, H2, H21 etc.) are all holes. The other files make up the game and construction set. You can copy the AUTORUN.SYS and AUTORUN.BXL files to another freshly formatted disk with DOS 2.0 or 2.5 on it, and use that disk as a self-contained program/data disk for new courses. The INIT file tells the program how many courses are on the disk — to start a disk of all new holes, don't copy the INIT file. Instead, initialize the disk as explained above. **A**

David Plotkin has been an ***Antic*** *contributor since the earliest issues. He is a chemical engineer for Chevron and lives in Walnut Creek, California.*

ALAN REEVE

By Bill Pike

Antic's Exclusive Interview: Part 2

Talking with the creator of the Diamond Operating System

The Diamond Operating System Cartridge (June 1989 Antic cover story) finally brought a mouse-operated graphic interface to the 8-bit Atari, complete with windows and drop-down menus. Diamond's college-student creator, Alan Reeve of Reeve Software, has been a long-standing supporter of the Atari community. This interview took place in Portland, Oregon while Reeve was attending a Special Meeting of the Portland Atari Club (PAC). Interviewers were PAC Special Projects Director David Moore and PAC President Bill Pike. Part 1 of this interview appeared in the previous issue of Antic.

Bill: How did you get into Atari?

Alan: I got into computers in the sixth grade when the school got an Apple II. Then around eighth grade I bugged the heck out of Mom and Dad to get me a computer. The choice was between the Atari 400 and the Vic-20 and I ended up going with the Atari 400.

I started in programming in BASIC on the Apple II and then, when I got it, a little BASIC on the 8-bit. Around ninth or tenth grade I started picking up assembly language. I thought it was sort of neat for Atari to include a little machine language routine written in that strange hexadecimal code. I started wondering why they did it.

Bill: Then you went into programming. I know one of the first things you brought out was the CX-85 10-key interface.

BUSINESS BEGINNINGS

Alan: Around 1986 I got the idea of forming a company with another kid, but he lived 30 miles away and things did not work out, and then about four or five months later a man by the name of Bruce Kennedy talked to me about writing a PC window. I said I could do it and of course I got caught up in programming. Bruce gave me a lot of starting information for Reeve Software and that is how the company got started.

Bill: Is there anybody involved in Reeve Software besides yourself, or are you sort of a loner?

Alan: Myself, I do everything, but my parents help out a lot.

Bill: Then Reeve Software brought out NewsStation.

Alan: NewsStation, NewsStation Companion, and Publishing Pro. NewsStation came after a idea that I had from NewsRoom on the Commodore 64. At the time there was nothing like it for the Atari 8-bit.

Bill: When did you first get the idea of a graphic operating system for the 8-Bit? I know that GEOS does that for the Commodore 64 and has been very popular.

Alan: I guess I started pushing Diamond when John Nagy wrote a small article about it in Computer Shopper at the end of '87. And I started getting hundreds of letters from people who wanted to see it.

Bill: So you've been working since 1987, almost two years now, to put the cartridge together.

Alan: The programming really started around May 1988.

Bill: I imagine it was sort of difficult. You were saying that Diamond is a 64K bank-switched cartridge.

Alan: It started out as a disk-based program. Most of the disk program was done in August and September of 1988 and the cartridge was finished in October thru December.

Bill: Why did you change from disk to cartridge? Because you could get more stuff in it? Or were you trying to keep Piracy down?

Alan: Basically because we couldn't do what we are doing unless we went to cartridge. There is not enough memory in the 8-bit Atari. One of the big things about the disk version is that if you quit to BASIC you couldn't get back to Diamond. You can't have both in the computer at once.

However, with the cartridge, when you quit to BASIC the cartridge is still plugged into the computer. And you can copy that data back into the computer and wheel it right on into the operating system right from the banks.

MEMORY & DOS

Bill: So it takes 8K of memory for that one cartridge and the rest is all available for program?

Alan: That's right!

Bill: Does Diamond support the extra memory of a 130XE or the upgraded computers yet?

Alan: Yes. Right now we have three memory drivers — the 48K driver, the 64K driver, and the 128K driver. With these memory drivers we set up Lo-Mem and the point just above the desk accessories, and the high memory point for an additional memory system.

Bill: Is Diamond totally compatible with the new Turbo-816 upgrade for the 8-bit?

Alan: Yes, we got the go ahead from Chuck, who runs Dataque Software. He says the new version works fine with the Turbo-816.

Bill: Well, that should be quite a shot in the arm for the 8-Bit Atari, adding a high-speed operating system like Turbo-816 and a Graphics Operating Environment like Diamond.

At our meeting here yesterday, Diamond surprised a number of people. A number of the people in the audience were ST users. Is there any particular thing that you can do on a ST graphics system that Diamond cannot do? I couldn't see anything myself.

Alan: To lasso files was mentioned. That's one thing.

David: You're going to do the lasso later, right?

Alan: I may eventually do the lasso, but there is no guarantee that I will. It's not too big a deal. Other than that, Diamond has two windows and the ST has four windows.

Bill: Diamond supports up to six disk drives?

Alan: Seven.

Bill: Seven disk drives. And obviously from what David is running it will support hard-disk systems, RAMdisks, and floppy disks.

Diamond makes a new computer out of the 8-bit — more intuitive, easy to use — and it looks nicer.

David: And ICD's MIO interface box.

Bill: And the MIO. Is there anything it doesn't support?

David: Does it work with the P:R: connector?

Alan: A lot of people wonder if Diamond supports this and that. It's not a matter of Diamond working with your setup, but rather your operating system. If your DOS supports it, Diamond should work with it.

Bill: You just completed a patch so that Diamond will format correctly with SpartaDOS?

Alan: The SpartaDOS-X cartridge. The problem with that was that when you called the format function it brought the format menu out in colors that were a little difficult to read. We made a little desk accessory that will give you the standard colors.

Bill: It works with SpartaDOS 3.2?

Alan: The format function of 3.2 formats in DOS 2.0. Diamond doesn't like reading a DOS 2.0 disk when it is using SpartaDOS 3.2. We're going to get a desk accessory that will work in 3.2 by calling the XINIT function of SpartaDOS.

Bill: You are using a 64K bank-selected Super Cartridge so you can put another cartridge with it. Does Diamond work with MyDOS?

Alan: Not at present. Someone did a version that we have that does work with MyDOS, but the present version doesn't support it.

Bill: How about Atari DOS 2.5?

Alan: Atari DOS 2.0, 2.5, SpartaDOS 3.2, SpartaDOS-X, SmartDOS, and others are supported.

David: TopDOS?

Alan: I haven't had anyone say that it doesn't work. Diamond will work with anything that uses a DOS 2.0 format. And TopDOS does that.

Bill: What desk accessories do you have out now for Diamond?

Alan: Right now we have a couple of simple ones, The Re-Booter, and X-Boot, which was written by a person in Michigan.

Bill: What does X-Boot do?

Alan: Basically it gets you back to the desktop. It does it a little neater than Re-Boot does.

Bill: There was some talk, before Diamond came out, that Atari might be picking up Diamond to include with all its 8-bit machines. Have you heard anything more about that?

Alan: I talked with Sig Hartmann at the Atari Booth at the Anaheim show. At first I give him three car-

tridges to look at, but apparently they were misplaced. The second time he gave us a list of people to send Diamond to. I think that if Atari were really interested in the product they would be contacting me rather than the other way around.

Bill: How are sales going on the Diamond system?

Alan: I think a lot of people are waiting to see what applications come out.

MARKETING OVERSEAS

Bill: You said you were talking to somebody about about marketing Diamond in Europe but you hadn't had much luck. With the popularity of the 8-bit machine in Europe, do you have any other thoughts on that?

Alan: It looks like we will have to do it ourselves. I have had letters from there and I have had several inquiries from reviewers who are interested in reviewing Diamond. Obviously we don't really care to have Diamond reviewed if there is no sales outlet to supply the product. It's not much good reading about a new product you can't buy.

Bill: If somebody reviews Diamond in Europe you might get somebody interested in selling it, contacting you and so on. So you have the flip side of the coin, too. Would you think of doing direct sales to Europe from your location?

Alan: I am more than happy to do direct sales. If fact I'm more than happy to do that for anybody who wants Diamond right now.

David: You said something earlier about Australia. Did you say you had sold some to Australia?

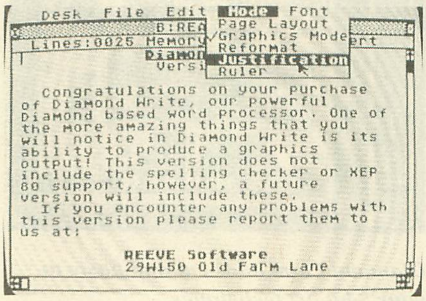
Alan: We've received a couple of orders from England, a couple from Australia, and some from South America.

David: Since they use a different television system in Europe is there any difference in the Diamond program sold to them?

Alan: No, it is the same program. We haven't had any problems yet.

CUSTOMER SERVICE

David: If people do have problems what is the best way to talk to you about them? Where can they



Diamond Write brings your Atari mouse-controlled word processing.

go to get the simple questions answered?

Alan: The best way is either to contact me online on GEnie or write to me directly. That way you know it will get to me eventually. During the summer it is sort of hard to reach me by phone because I am in and out. During the school year after 4 p.m. Central Time the answering machine is off and there is someone there. Or before that leave a message on the answering machine and I'll try to get back.

Bill: Do you have your own section on GEnie now?

Alan: I have my own category in the Atari 8-Bit section.

David: Is that ReeveSoft?

Alan: Category 14 and I believe file section number 26.

Bill: Are you hoping to get desktop applications up on GEnie so that anybody can download them?

Alan: Everything I have right now. Every little accessory that I have gotten from people we have put up on GEnie. And we have had other people put stuff up there as well.

David: How hard would it be for the normal user to convert programs to run under Diamond? Do you have plans to make a conversion program of your own?

Alan: Each program is so different that it really wouldn't be feasible.

Bill: Could a program be written, something like a monitor program, that would check the load addresses of a program and show where there are conflicts with Diamond?

CONVERTNG TO DIAMOND

Alan: Converting programs to use the Diamond environment takes someone who knows what they are doing. A machine language program needs to have someone who has the source code and can make changes so you have a Diamond interface in the program. BASIC programs likewise need a real programmer.

Speaking of programs that are not written for the Diamond environment, right now if you try to load a program without a .APP or .COM extender Diamond will drop out of the system and let the program run by itself.

Bill: So a Diamond program has to have a .APP extender?

Alan: Diamond-based programs have a .APP extender. Command lines (like the parameters for a ST .TTP file) have a .COM extender. Other than that, the Diamond kicks out and loads the program as if the cartridge weren't there.

Bill: In order to get the cartridge back you have to do a reset or a cold start?

Alan: It is possible to do it from software. But most programs were written before Diamond was produced and won't exit back to the Diamond Cartridge.

Bill: Diamond appears to be quite a challenge for programmers. What type of programs would you like to see from outside programmers?

Alan: I don't have any particular

program that I would like to see. I think obviously spreadsheets, databases, terminal programs – all those would be great to see. That's what we need, more applications. I would just love to see the community support Diamond, and for the programmers to support it. Diamond sort of makes the 8-bit a new computer. The more Diamond-based software you have, the better it will be.

David: What languages does Diamond support at present, aside from assembly language?

Alan: Again, it is not so much Diamond supporting the languages. It will run any of the OSS language cartridges. But the link to Diamond is through assembly language. All you have to do is load the accumulator with the function referenced and do a JSR to the Diamond vector and all languages have that power one way or another.

David: How about C language?

Alan: We plan on coming out with a Diamond Assembler, a Diamond BASIC, a Diamond C and other languages eventually if the interest is there. There have to be enough users willing to purchase the languages. Like I say, I am only one person and I can't do it all by myself. I can't buy 200 printers to make printer drivers for all of them. I can't buy all the languages out there and convert them all to use the Diamond environment. If I did that the other major applications would never get ready.

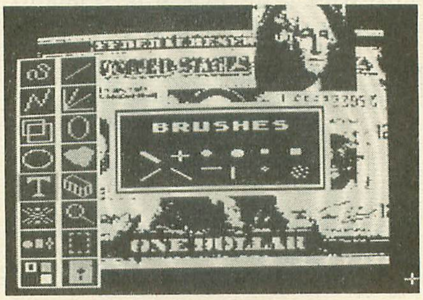
A "NEW" COMPUTER

Bill: It sounds like what you have done with Diamond is make a new computer out of the 8-bit that is more friendly, more intuitive and easier to use – and it looks nicer.

Alan: That is what bugged me about one of the reviews, in Atari Explorer. The reviewer said it works great and everything looks fine, but I am used to the old way – so why should I get a new one?

David: I have to admit that it is clumsy at first for someone who is used to typing things in. However, after you learn it, it's great.

Alan: It's like learning one program, then having to learn a different program that is more powerful.



Diamond Paint adds cut-and-paste to your 8-bit art techniques.

I think Diamond is more powerful. The icons and the menus that are available replace all the programming necessary to set up the user interfaces in an old-fashioned program. You just set up a few things and let Diamond take it from there. It also flattens out the learning curve on new applications, in that there is nothing unexpected in the user interface. The user is used to the display and what everything does.

Bill: Have you thought about writing a Icon editor for Diamond?

Alan: Not for the Desktop. You are not going to be able to put your own icons in. They are burned into the ROM. I am thinking of a Font Editor to be included with the Diamond Paint program.

Bill: Speaking of font editing. Will the paint program support the traditional nine-sector Atari fonts?

Alan: With the font editor you could import those fonts and convert them to Diamond fonts. Diamond fonts are different.

David: So there is a conversion program to take care of this operation?

Alan: The program is under construction now.

Bill: What about Print Shop icons?

Alan: I suppose that you could write a program to convert the file to a clip-art file. However, Print Shop icons aren't in a standard file format.

David: Clip-art would be good especially since there are a lot of Print Shop icons out there, and you could send the clip-art into the publishing program.

Bill: NewsStation does that now.

Alan: And so will Diamond NewsStation when it is released shortly. It will also use the clip art and graphics from Diamond Paint.

David: In other words, it will be almost a carbon copy of what you have now?

Bill: Except you will use the mouse.

Alan: Yes, you will have the Diamond environment with the NewsStation features with a couple of additions. One of them will be to reverse the background. (Sometimes if you load a picture from ComputerEyes you get a negative image.)

UPGRADES & 8-BIT FUTURE

David: How about upgrades? What will it cost me to upgrade the version 1.0 cartridge to the version 2.0 cartridge you're working on right now? And where should I send it?

Alan: Upgrades for the cartridge that involve the ROM chip cost $15 and you can either send the cartridge back to us with a check for $15, or you can send us a check for $15 and we will send you the PROM and you can plug it into the cartridge.

Bill: You need to be a registered user in order to get the PROM.

Alan: Yes, I need to have your warranty card on file.

Bill: What do you think of the future of the 8-bit? My own feelings are that people want the newest thing on the block. Other than that, the 8-bit does just about

everything I want it to do. I do recommend it to people who are just getting into computing and want to do programming. The 8-bit is a heck of a lot easier to program than the ST. Would you concur?

Alan: I don't know that it is a lot easier but it is a much better investment. You can spend a couple hundred dollars and get a solid-based system. With the ST you spend a thousand dollars or more to get the same capabilities. The software is also less expensive for the 8-bit, especially with all the public domain programs and shareware coming out now.

Bill: There are still about 4,000 programs out there for the 8-bit – not including little utility programs and such.

Alan: The future of the 8-bit is really in the hands of the users. If people start supporting Diamond and programmers start using the Diamond shell and writing application programs it could have a bright future. But if people keep this wait-and-see attitude, I don't know. I'm only one person.

Bill: Diamond looks like the next stage for the 8-bit Atari computer — and possibly for the rebirth of the 8-bit machine, if enough people start putting out applications and using it. When the Atari first came out it was a challenge because it did so much. Then people started losing interest. Now suddenly they have a new machine to work with. But I realize that the major software houses are not supporting the 8-bit, right now. I also realize that most of the support for the 8-bit is from programmers like yourself, users and user groups. So I guess that the bottom line is to support your local programmer and maybe that will get the big boys off their duffs. Well, thanks so much for talking to us, Alan Reeve. Do you have any last thoughts before we shut down?

Alan: BUY DIAMOND!!!

William (Bill) Pike is the president of the Portland Atari Club (PAC) in Beaverton, Oregon. His articles appear in user group newsletters around the world. You can write to him at PAC, P.O. Box 1692, Beaverton, OR 97005.

DIAMOND CARTRIDGE $79.95
(With Programmers' Kit and Diamond Paint included)
DIAMOND WRITE $29.95
DIAMOND NEWSSTATION $29.95
Reeve Software, 29W150 Old Farm Lane, Warrenville, IL 60555. (312) 393-2317.

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Desktop Publishing With Your 8-bit Atari

Unlocking XE/XL/800 page-designing power

By David Plotkin

Learn about the software that will turn your Atari into a publishing powerhouse. At this writing, all the products surveyed here are still available – either direct from the makers or from the mail-order companies that advertise in Antic.

Desktop publishing programs for 8-bit Atari computers come in several categories. Some software allows you to print cards, signs, awards, and other types of forms, with semi-custom results. These publisher programs tend to be very easy to use, but are limited in their flexibility.

The page-layout software category lets you put text and clip-art on the page using custom fonts and pictures. Such programs offer more flexibility, but tend to be more difficult to use and somewhat unwieldy.

The "full" publishing program category can include text and graphics in various formats. These are not quite as flexible as the page-layout programs, but are easier to use overall. There are also a whole host of utility programs that convert graphics from one format to another.

Print Shop

One of the best-selling programs of all time is Broderbund's **Print Shop**. It was successful not only because it addressed a market that had not been dealt with before, but provided a product that everyone needed and could use. The user interface was so simple that the excellent manual really wasn't necessary.

Print Shop starts out with a main menu, from which you can choose to print a card, sign, banner or letterhead. Once you make your selection, the program leads you step-by-step through the creation process, adding borders, graphics and text to whatever you are creating. Each item (border, graphic, or text style) is selected from a menu, and samples of what you will be getting are shown right on the screen.

The 60 graphic icons are available in three sizes, and eight different fonts are included. These fonts can be further customized by using three modifiers (solid, outline or 3-D drop shadows). There are also nine border designs. The graphics can be added to a page only in certain positions, and only a single graphic design may be used on a page. The text is added to your work on a line-by-line basis, and each line can have a different size of text, although all lines must be in the same font.

There is also a crude editor for editing and saving graphics. You cannot edit the fonts or borders, nor can you save the final design. A Kaleidoscope function lets you freeze a design that you like, then add text to it to make a sign.

Print Shop Companion

Also from Broderbund, **Print Shop Companion** comes with 50 additional border styles, 20 new graphics and 12 new fonts, but it features a much improved Graphics editor containing most of the features of classic drawing programs. You can draw shapes, scroll your creation, Undo, and fill. Also included are mirror moves, and inserting or deleting columns. The border editor includes most of the same functions as the graphic editor, allowing you to make your own borders.

The calendar maker can generate a calendar from 1753 to 9999 on a full sheet of paper. You can choose from weekly or monthly calendars. Each day can contain up to a six line message, and graphics can be added to the calendars as well. There is even a "creature maker" which can be used to combine feet, body and heads from various creatures to form some truly bizarre results. Childish, perhaps, but fun. The Print Shop Companion provides much needed capabilities missing from the original Print Shop.

Print Shop Extras

The popularity of Print Shop has spawned quite a few disks of Print Shop graphics, available from several different suppliers (including Broderbund itself) and in the public domain.

Shepherd Software has two utilities that work with Print Shop icons. **Icon Printer** prints 49 icons per page, and can dump your entire disk of icons to the printer automatically, complete with names. The icons can be printed in disk order or alphabetically. You can also rename the icons. The second program is called **Video Jukebox**. Among a whole variety of music-oriented functions, it can convert Micro-Painter or Micro-Illustrator graphics format screens to the "Screen Magic" (kaleidoscope) format and back. This allows you to put the kaleidoscope patterns into your favorite paint program – or, more importantly, to import your paint program pictures into Print Shop and add text to them there.

Hi-Tech Creations

Another product along the same lines as Print Shop is Hi-Tech Creation's **Print Power**, which comes on two disks in "enhanced density" format – you need an Atari 1050 disk drive or equivalent. Print Power has seven fonts, 60 graphics and 20 borders, and can be used to create cards, signs, stationary and banners. Except for the banners, all of these can be turned 90 degrees when printed.

Banners can be an incredible 42 pages long and can include multiple lines of text. The graphics can be printed in five sizes, but, as with Print Shop, only one graphic icon can be put on a page. However, these icons can be freely positioned on the page, unlike Print Shop's fixed positioning. There is no graphic editor, so you cannot customize an icon or create your own.

Banners can use up to 11 different text sizes, other items can use three. Special text effects include bold, italics, outline, shadow, 3-D and shadow italics. These special effects can be varied by line of text, and up to four different fonts can be used on a page. You can even arrange it so that text shows through background graphics if you like. When designing the card, the screen display is less clear and detailed that Print Shop's. Further, you must make all your choices from text on the screen, referring to a separate reference card to see what each graphic or border actually looks like. But then, Print Power only costs $14.95!

Also from Hi-Tech comes the **Sesame Street Print Kit**, which works much like Print Power but includes the Sesame Street characters to use in making storybook pages. In addition, the Kit can use all the borders, graphics and fonts that come with Print Power.

Awardware lets you choose from 20 different borders, five different fonts and 25 different graphics to build award printouts. The last template you created is always easily available, or you can load one of the many templates included with the product. These are shown only in the accompanying documentation, and there are nearly 100 unique types of award templates, so keep the manual handy.

The Converter

The Converter from No Frills Software is a remarkable utility that adds considerable functionality to Print Power, Sesame Street Print Kit, Awardware and even has some tricks to enhance Newsroom (reviewed later). The Converter lets you convert graphics from one format to another. It can load Print Shop icons, Awardware graphics and seals, Print Power graphics and Sesame Street Print Kit graphics. It can save Awardware graphics, Awardware seals, Print Power graphics and Newsroom clip art.

Note that one thing The Converter does *not* do is save icons in the Print Shop format. You can load any of the readily available Print Shop icons, however, and save them as Print Power graphics or Newsroom clip art.

Once a graphic is loaded, another powerful feature comes into play, The Converter's graphic editor. This editor can modify any graphic it can load. As a result, you can use The Converter to edit your Print Power graphics, filling in for the missing Print Power graphic editor. You can create new graphics and seals for Awardware, which also lacks an editor. The Converter is "smart" enough to determine the format of a disk it's reading, and

adjust to match, even with the unusual Print Shop format. The Converter can even format disks in any format it can save in.

Page Designer

Xlent Software produces two 8-bit products designed to lay out pages suitable for signs and newsletters. **Page Designer** splits a page into top and bottom halves. Each half fills an entire screen, so that you must switch between two screens to lay out an entire page. This display method increases the resolution of the page, letting you do some pretty fine detail work.

Page Designer lets you load a Graphics 7.5 or Graphics 8 picture to either the top or bottom of the page. Compacted KoalaPad pictures won't work directly, but there is an option from the main menu to uncompact such pictures, so you do have access to them. A very simple graphic editor, the Sketchpad, lets you generate designs, draw shapes, plot points, or modify pictures loaded from disk. You select your drawing tools and draw with a joystick.

Page Designer also lets you add text to the page, in either 40 or 80 column mode. Text must be laid on top of any graphic, since loading the graphic wipes out any text underneath. Page Designer is unable to load text from disk, instead you must type it in directly. The printouts are very high quality, and the results can be saved to disk.

Typesetter

Typesetter is Xlent's more advanced package. It also starts with the concept of the blank page, to which you can add graphics and text. Typesetter allows very high resolution (704x624 on a 48K machine, 768x640 on a 130XE), taking full advantage of the extra memory in 130XEs. Typesetter lets you edit a page with much higher resolution than the Atari screen by turning the screen into a scrolling window of a much larger page. The main screen is kept resident in memory at all times.

You can add text directly to this screen. Typesetter supports 32 sizes of text, and can use any standard 8-sector font. You can vary not only the height but the width of a character as well. You can rotate characters in 90 degree increments and type in any direction (useful when using rotated characters). Special "sliced" characters and italics are also possible in the text editor.

You add text simply by typing it in. Again, you cannot load text from disk. Editing your text can be very tedious, especially if you have to add a new line in the middle of the page. There's no way to insert a new line, so you end up retyping anything below the new line you wanted to add. (This is also true of Page Designer.)

Typesetter contains a graphic editor. To keep as much memory available as possible for the high-resolution page, you have to load this editor separately, making it a somewhat tedious process to switch between the main text screen and the graphic editor.

You can design your own icons in the graphic editor, save the icon to disk or "stamp" it onto the main screen. The editor has tools for drawing shapes, doing six pattern fills, plotting points and lines, and inverting the screen. As with Page Designer, the editor is joystick-controlled and very easy to use. In the 130XE version, you can use a KoalaPad or Atari Touch Tablet to control the graphic editor as well. You can load standard 62-sector graphics (such as those created with MicroPainter) directly to the screen. You have the choice of loading the picture to the middle 40 columns of the page or expanding it to fill the whole width of the page.

Typesetter can load Page Designer pages, save its own pages and load them and, of course, print out the results. There are three different options for printing – vertical full height (normal), vertical half height, and horizontal full sideways.

Xlent Utilities

Xlent also produces a utility to make it easier to work with their products, called **Rubber Stamp**. It lets you create and save your own icons, typically for use with Typesetter. It can also convert Print Shop icons to Typesetter icons, print labels, and edit 16x16 high resolution fonts for use with Typesetter. The Rubber Stamp graphic editor is quite versatile. It lets you edit four icons at once, and move, expand, shrink, mirror, duplicate, reverse and invert any icon. You can use a joystick or touch tablet, and it has the capabilities to do circles, spheres, ellipses and boxes. Again, the manual is weak, but the package is relatively simple to use.

The final tool in the Xlent toolbox is **Print Shop Interface**. With this program, you can create Print Shop icons and fonts from 62-sector picture files, change a picture file into the Screen Magic format, and capture part of a picture file as a Print Shop icon. You can also convert a Typesetter icon to a letter in a Print Shop font, so you can have multiple graphics on a Print Shop page. PS Interface can also convert Print Shop fonts into Typesetter.

The Newsroom

Springboard's **The Newsroom** puts five different "departments" at your disposal to publish your newspaper – the Press, Copy Desk, Banners, Layout and Photo Lab. These are selected from a main menu screen using the joystick.

You need to understand how a simple newsletter front-page is laid

out. Across the top of the page is the banner, where your headline goes. The rest of the page is broken up into six equal panels – two columns with three panels each. You can also choose to dispense with the banner and have a page consisting of eight equal panels.

Printed results from The Newsroom are excellent and certainly worthy of being used in a newsletter, provided you can live with the panel-restricted layout. Another Important Note: The Newsroom has difficulty working with anything but the Atari 1050 disk drive and Atari 850 printer interface.

The Newsroom includes over 600 pieces of clip-art, and other disks are available. You can also create your own clip-art using The Converter, as explained above. Text can be in one of several fonts and sizes. You can also use the Graphics Tool section to add lines, circles, plot points and pattern fills. There are 10 pen shapes and fill patterns, and the Graphic tool even includes a magnify function for drawing pixel-by-pixel. The banner is limited to a pre-set size, but within that limitation, you have everything you need to make a fancy headline. There is even an Undo function (called "Oops") which is available in several other departments as well.

Once you complete a banner, you can start putting together your other panels. These usually consist of graphics (visit the Photo Lab) and some text (visit the Copy Desk). The Photo Lab offers the same tools as the banner, although here you can cut out part of your creation for use as the actual photo.

At the Copy Desk, you add text by typing it into a simple word processor. This tool even includes some block functions. Three different fonts and two sizes are available, with the larger font being more appropriate for a headline, while the smaller font is used for the body of the article. One large and one normal size font can be mixed in a panel, though not on the same line. The text automatically flows around a photo, and you can even move the photo and the text will reflow around it.

To complete a newsletter, you must finish all six or eight panels and save them to disk. Then you use the Layout department to specify the position of the panels on the page and use the Press department to print them out. Note that it's up to you to make sure that text in panels flows smoothly from one to another. There is no way to load word processor text from disk and place it in a panel.

News Station

News Station from Reeve Software is similar to The Newsroom in its layout concept. Eight panels (called "plates") make up the page. News Station itself doesn't support a banner, but by adding **News Station Companion**, you can use banners. As with The Newsroom, each panel is saved separately to disk, but News Station Companion lets you combine all eight files into one (much smaller) file for printing.

News Station toggles between graphics and text modes using keystrokes. In graphics mode, you can import 62-sector picture files directly, add multiple Print Shop icons in three sizes, or create your own pictures using the graphics editor. You can also import and compressed picture files using a utility included in News Station Companion. The graphics editor includes all the standard functions, and can be controlled with a joystick or touch tablet.

In text mode you enter your text, either typed in directly from the keyboard or loaded from an ASCII file on disk. This is the only package with this capability. Unfortunately, News Station does not support word wrap.

News Station comes with five built-in fonts, but can use any standard font – in eight widths and heights. This variation in width and height lends considerable flexibility in constructing headlines, sub-heads and the body of the text. Multiple fonts can be used in a panel, even mixing them on a line. However, News Station does not automatically flow text around graphics. When importing ASCII text, the text must be short enough to fit in one panel.

Fortunately, News Station Companion adds still another capability. It can load a large text file and automatically break it down into the eight panels for you. This page can have one, two or three columns as well. If the file is longer than a page, the text can be continued on other pages, another feature unique to the News Station with its Companion. ▲

The Converter	$19.95
No Frills Software, 800 East 23rd Street, Kearney, NB 68847. (308) 234-6250.	
Awardware	$14.95
Sesame Street Print Kit	$12.95
Print Power	$14.95
Hi-Tech Expressions, 1700 N.W. 65th Avenue, Suite 9, Plantation, FL 33313. (305) 584-6386.	
Icon Printer	$10
Video Jukebox	$10
Shepherd Software, 1215 West Jackson, Spearfish, SD 57783.	
Print Shop	$49.95
Print Shop Companion	$34.95
Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. (415) 492-3200.	
News Station	$29.95
News Station Companion	$29.95
Reeve Software, 29W150 Old Farm Lane, Warrenville, IL 60555. (312) 393-2317.	
The Newsroom	$49.95
Clip-art Volumes 1-3	$29.95 each
Springboard Software, 7808 Creekridge Circle, Minneapolis, MN 55435. (612) 944-3912.	
Typesetter	$34.95
Page Designer	$29.95
Rubber Stamp	$29.95
PS Interface	$29.95
XLENT Software, P.O. Box 5228, Springfield, VA 22150. (703) 644-8881.	

TYPING SPECIAL ATARI CHARACTERS

The Atari Special Characters and the keys you must type in order to get them are shown below:

For [CONTROL] key combination, *hold down* [CONTROL] while pressing the next key. For inverse [CONTROL] [A] through [CONTROL] [Z], press the [◪] key—or [人] on the 400/800—then *release* it before pressing the next key. (Press [◪] or [人] again to turn off inverse.) For [ESC] key combinations, press [ESC] and then *release* it before pressing the next key.

Carefully study the chart above and pay close attention to differences between lookalike characters such as the slash key's [/] and the [CONTROL] [F] symbol [◪].

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL −
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL +
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		SHIFT =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS
	ESC SHIFT DELETE
	ESC SHIFT INSERT
	ESC CTRL TAB
	ESC SHIFT TAB
	人 CTRL .
	人 CTRL ;
	人 SHIFT =
	ESC CTRL 2
	ESC CTRL DELETE
	ESC CTRL INSERT

TYPO II AUTOMATIC PROOFREADER

TYPO II automatically proofreads **Antic**'s type-in BASIC listings. Type in the listing below and SAVE a copy to disk or cassette. Now type GOTO 32000. At the prompt, type in a single program line **without the two-letter TYPO II code at the beginning**. Then press [RETURN].

Your line will reappear at the bottom of the screen. If the TYPO II code does not match the code in the magazine, then you've mistyped your line.

To call back a previously typed line, type [*], then the line number, then [RETURN]. When the completed line appears, press [RETURN] again. This is how TYPO II proofreads itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000. To remove TYPO II from your program, type LIST "D:FILENAME",0,31999, then [RETURN], then NEW, then ENTER "D:FILENAME", then [RETURN]. Now you can SAVE or LIST your program to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "K":POSITION 11,1:? "TYPO II"

EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "K":POSITION 11,1:? " TYPO II 
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

ANTIC HIGH ROLLERS

DICE-THROWING EXCITEMENT COMBINES LUCK WITH STRATEGY

Article on page 9

LISTING 1

Don't type the TYPO II Codes!

```
BY 1 REM HIGH ROLLERS
PY 2 REM BY FRANK WALTERS
YP 3 REM (c)1990, ANTIC PUBLISHING, INC.
QB 10 GOTO 670
OR 20 POSITION 10,23:? "
      ";
ZT 30 RETURN
LM 40 REM SCORE
HP 50 FL=0:FOR I=1 TO 6
NG 60 IF C(I)=3 THEN TEMP=TEMP+1000:FL=1
IV 70 NEXT I
DY 80 FOR I=1 TO 3
TO 90 IF D(I)=1 THEN TEMP=TEMP+100:FL=1
OP 100 IF D(I)=5 THEN TEMP=TEMP+50:FL=1
FT 110 NEXT I
LM 120 IF  NOT FL THEN TEMP=0:GOSUB 290:G
   OSUB 420:GOSUB 150
RS 130 FL=0:RETURN
CX 140 REM END OF TURN
ZT 150 IF TEMP=0 THEN 210
CD 160 IF TOTAL(P)+TEMP<=3000 THEN GOTO 1
   70
BT 165 POSITION 10,23:? " YOU ARE OVER 30
   00";:GOSUB 1020:FOR I=1 TO 300:NEXT I:
   FL=1:GOTO 210
GH 170 IF TOTAL(P)=0 AND TEMP<500 THEN PO
   SITION 10,23:? " NEED 500 TO START";:F
   OR I=1 TO 300:NEXT I:GOTO 460
RC 180 TOTAL(P)=TOTAL(P)+TEMP:TEMP=TOTAL(
   P):GOSUB 290:TOT$(P*4-3,P*4)=TEMP$
TJ 190 GOSUB 420
ME 200 IF TOTAL(P)=3000 THEN POP :GOTO 54
   0
VK 210 POSITION 24,P*2+1:? "     "
HX 220 POSITION 1,P*2+1:? "   "
WM 230 GOSUB 20:IF TEMP AND  NOT FL THEN
   GOSUB 1000
BJ 240 IF FL THEN TEMP=0
ET 250 IF  NOT TEMP THEN GOSUB 1020
MT 260 TEMP$="":TEMP=0:FL=0
ZM 270 RETURN
PF 280 REM FORMAT SCORE
EF 290 TEMP$=""
EJ 300 IF TEMP<1000 THEN TEMP$(1)=" "
PJ 310 IF TEMP<100 THEN TEMP$(2)=" "
CD 320 IF TEMP<10 THEN TEMP$(3)=" "
AX 330 TEMP$(LEN(TEMP$)+1)=STR$(TEMP)
ZH 340 RETURN
OL 350 REM PRINT GAME SCREEN
ZO 360 POSITION 0,0:? "█████████████████High
   █Rollers█████████████████"
JR 370 POSITION 5,1:? "Player            Bank
    Score        Wins":POSITION 0,2:? LINE$

DV 380 FOR I=1 TO PN
FF 390 POSITION 5,I*2+1:? PLAYR$(I*10-9,I
   *10);"-██":? LINE$
QP 400 IF WIN(I) THEN TEMP=WIN(I):GOSUB 2
   90:POSITION 35,I*2+1:? TEMP$:TEMP=0
MM 410 NEXT I:RETURN
UO 420 POSITION 18,P*2+1:? TOT$(P*4-3,P*4
   ):RETURN
DS 430 REM MAIN GAME LOOP
DA 440 P=P+1:POKE 77,0:IF P>PN THEN P=1
TB 450 POSITION 1,P*2+1:? AR$
IK 460 GOSUB 20:POSITION 10,23:? "PUSH ST
   ICK TO ROLL";
AT 470 IF STRIG(0)=0 THEN GOSUB 640:GOSUB
    150:GOTO 440
CY 480 IF STICK(0)=15 THEN 470
CN 490 GOSUB 20:FOR D=1 TO 3:GOSUB 950:NE
   XT D:GOSUB 980
OL 500 GOSUB 50:GOSUB 290:IF TEMP THEN PO
   SITION 24,P*2+1:? TEMP$
DO 510 IF TEMP=0 THEN 440
PG 520 GOTO 460
DF 530 REM WINNER ROUTINE
XC 540 FOR X=240 TO 50 STEP -2:SOUND 0,X,
   10,8:NEXT X:SOUND 0,0,0,0:WIN(P)=WIN(P
   )+1:IF WIN(P)>9 THEN WIN(P)=9
HH 550 POSITION 24,P*2+1:? "███ ":POSITIO
   N 1,P*2+1:? "███"
MT 560 POSITION 0,23:? "START=REPLAY SELE
   CT=RESTART OPTION=QUIT";
TB 570 FOR I=1 TO 10:IF  NOT FL THEN POSI
   TION 28,P*2+1:? "WINNER"
AY 580 IF PEEK(53279)=6 THEN FL=0:POKE 71
   2,0:GOTO 1030
NS 590 IF PEEK(53279)=3 THEN GRAPHICS 0:P
   OKE 82,2:END
CY 600 IF PEEK(53279)=5 THEN RUN
GW 610 IF FL THEN POSITION 28,P*2+1:? "WI
   NNER"
WM 620 NEXT I:FL= NOT FL:POKE 712,PEEK(53
   770):GOTO 570
UU 630 REM CAN'T PASS BEFORE ROLL
FH 640 IF TEMP=0 THEN GOSUB 20:POSITION 1
   2,23:? "  ROLL FIRST";:FOR I=1 TO 300:
   NEXT I:POP :GOTO 460
ZM 650 RETURN
RK 660 REM INITIALIZE
TG 670 DIM D$(102),D(6),C(6),TEMP$(4),NAM
   E$(11),PLAYR$(80),LINE$(40),AR$(3):AR$
   ="==>"
SW 680 LINE$="█":LINE$(40)=LINE$:LINE$(2)
   =LINE$
UH 690 D$="███↓←←←█○█↓←←←████○███↓←←←████↓←←
   ←███○○███↓←←←██○██↓←←←████○○██○↓←←←████↓←←←○██○
   ○██○↓←←←███○██↓←←←○███○○██○↓←←←○██○↓←←←○███○"
OC 700 PLAYR$="-":PLAYR$(80)=PLAYR$:PLAYR
   $(2)=PLAYR$
QL 710 FOR I=1 TO 6:D(I)=0:C(I)=0:NEXT I
WB 720 GRAPHICS 1:POKE 708,10:POKE 710,0:
   POKE 711,88:POKE 752,1:POSITION 4,3:?
   #6;"high  rollers"
UU 730 POSITION 9,9:? #6;"by":POSITION 4,
   11:? #6;"frank walters":POSITION 4,15:
   ? #6;"INSTRUCTIONS?"
PL 740 POSITION 8,17:? #6;"(Y/N)":POKE 65
   7,14:FOR I=1 TO 5 STEP 2:? D$(I*17-16,
   I*17);"↑↑→→";:NEXT I:POKE 82,0
KF 750 GOSUB 1220:IF K=89 OR K=121 THEN 1
   050
VN 760 IF K=78 OR K=110 THEN 790
QL 770 GOTO 750
BG 780 REM ENTER PLAYERS NAMES
NQ 790 GRAPHICS 0:POKE 752,1:POKE 710,128
   :POKE 82,0
HV 800 ? "HOW MANY PLAYERS?";
SP 810 GOSUB 1220
DT 820 IF K<49 OR K>56 THEN 810
XJ 830 PN=K-48:? PN:DIM TOTAL(PN),TOT$(PN
   *4):FOR I=1 TO PN:TOTAL(I)=0:NEXT I:TO
   T$(1)=" ":TOT$(PN*4)=" ":TOT$(2)=TOT$
QE 840 DIM WIN(PN):FOR I=1 TO PN:WIN(I)=0
   :NEXT I:POKE 752,0
DU 850 FOR I=1 TO PN
PR 860 POSITION 2,I*2:? "█PLAYER #";I;" N
   AME: █";:NAME$=""
UP 870 INPUT NAME$:L=LEN(NAME$):IF L>10 T
   HEN ? :? "MAX 10 LETTERS PLEASE!":FOR
   X=1 TO 500:NEXT X:? "↑█":GOTO 860
KS 880 IF  NOT LEN(NAME$) THEN 860
JP 890 TRAP 40000
OJ 900 PLAYR$(I*10-9,I*10)=NAME$
ZN 910 NEXT I:POKE 752,1
ZX 920 GOSUB 360:P=INT(RND(0)*PN)
OQ 930 GOTO 440
DZ 940 REM ROLL ONE DIE
GV 950 FOR Y=1 TO 10:D(D)=INT(RND(0)*6)+1
   :POSITION D*6+6,19:? D$(D(D)*17-16,D(D
   )*17)
EE 960 SOUND 0,100,12,15:SOUND 0,0,0,0:NE
   XT Y:RETURN
```

```
OT 970 REM TOTAL ALL 3 DICE
QW 980 FOR X=1 TO 6:C(X)=0:NEXT X:FOR D=1
    TO 5:C(D(D))=C(D(D))+1:NEXT D:RETURN
JT 990 REM SOUND SUBROUTINES
WB 1000 FOR X=1 TO 2:SOUND 0,3,0,8:FOR Y=
   1 TO 8:NEXT Y:SOUND 0,0,0,0
GH 1010 FOR Y=1 TO 3:NEXT Y:NEXT X:FOR X=
   14 TO 0 STEP -0.3:SOUND 0,5,10,X:SOUND
    1,20,10,X:NEXT X:RETURN
EI 1020 FOR X=8 TO 12:SOUND 0,50,X,8:NEXT
    X:FOR X=1 TO 20:NEXT X:SOUND 0,0,0,0:
   RETURN
KA 1030 L=LEN(TOT$):TOT$=" ":TOT$(L)=TOT$
   :TOT$(2)=TOT$:FOR I=1 TO PN:TOTAL(I)=0
   :NEXT I
PM 1040 TEMP=0:TEMP$="":GOTO 920
CZ 1050 GRAPHICS 0:POKE 752,1:POKE 710,22
   4
YJ 1060 ? "      Instructions for High Ro
   llers      "
FM 1070 ? "  A 3 dice game for 2 to 8 pla
   yers. If  less than 4 players, recomme
   nd each";
PU 1075 ? "      player enter name 2 or 3
    times."
DZ 1080 ? :? "OBJECT: To be the first pla
   yer to bank  exactly 3000 points.":?
QQ 1090 ? "JOYSTICK #1:  PUSH TO ROLL DIC
   E":? ,"    TRIGGER TO PASS TURN":? :?
   "SCORING ON EACH ROLL:":?
GS 1100 ? "    Any 3 of a kind = 1000 poi
   nts":? ," Each ace =  100 points":? ,"
   Each five =   50 points":?
CH 1110 ? "The player may continue rollin
   g as long as he/she scores on each rol
   l.";
JU 1115 ? " The turn ends on a 'no-score'
    or a pass."
JA 1120 GOSUB 1210:? "          page 2     h
   it <1> for page 1      "
JR 1130 ? "Opening BANK deposit requires
   a minimum of 500 points.";
UG 1135 ? " Subsequent deposits may  be a
   s little as 50 points.":?
YR 1140 ? "If the point score would cause
    the BANK to exceed 3000 points,";
CU 1145 ? " the points are   forfeited an
   d the turn passed."
LZ 1150 ? :? "Any time a no-score is roll
   ed,";
KF 1155 ? " the turn is passed to next pl
   ayer and all points on that turn are f
   orfeited."
AC 1160 ? :? "ORDER OF PLAY:   The first
   player is    selected at random and th
   e turn passes  in sequence.":?
MS 1170 ? "ODDS:  Any triple    -   6 out
   of 216":? "          Any score     - 156 o
   ut of 216"
YZ 1180 ? "         Any no-score -  60 out
   of 216"
YY 1190 GOSUB 1210:IF K=49 THEN GOTO 1050
TO 1200 GOTO 790
MG 1210 POSITION 6,23:? " Press any key t
   o continue ";
HN 1220 OPEN #1,4,0,"K:":GET #1,K:CLOSE #
   1:RETURN
```

ANTIC MUSIC TRANSPOSER

INSTANT KEY CHANGES FOR ANY *ANTIC MUSIC PROCESSOR* SONG

Article on page 11

LISTING 1

Don't type the TYPO II Codes!

```
CP 10 REM MUSIC TRANSPOSER
LZ 20 REM BY JOE CABUK
LJ 25 REM (c)1990, ANTIC PUBLISHING, INC.
AJ 30 REM FOR ANTIC MUSIC PROCESSOR
MD 40 REM FROM ANTIC, JUNE 89 & DEC 88
FE 50 OFF=40000
SD 60 DIM FN$(15),MU$(25600),KEYSIG$(34),
   OFFSET$(34),KEY$(2),Q$(1)
CV 100 ? " ANTIC MUSIC PROCESSOR TRANSPO
   SER"
KQ 105 TRAP 110
TC 110 ? :? "      Enter Source Song File
   Name                (Include Drive #)"
XK 120 ? :? "      e.g. D2:MYSONG.EXT
                  ";:INPUT FN$
WL 130 ? :? "   Loading... ";FN$
LF 140 CLOSE #1
YU 150 OPEN #1,4,0,FN$
LT 160 TRAP 230
FQ 170 I=0
CH 180 GET #1,A
QS 190 I=I+1
CY 200 MU$(I)=CHR$(A):REM READ THE SONG I
   NTO THE STRING MU$
OT 210 GOTO 180
CM 229 REM GET ERROR NUMBER
IC 230 ERR=PEEK(195)
IH 240 IF ERR=136 THEN 260:REM END-OF-FIL
   E ERROR ALLOWS CONTINUATION
HK 250 ? "ERROR NUMBER ";ERR;" HAS OCCURR
   ED":CLOSE #1:STOP :REM OTHER ERRORS ST
   OP EXECUTION
LK 260 CLOSE #1
LM 265 TRAP 300
WJ 300 ? :? "Enter the number of sharps o
   r flats   in the key signature of the
   piece     you are transposing."
FN 310 ? "e.g. 2#, 2S, 2b, or 3F"
EW 320 INPUT KEY$
LF 325 TRAP 300
IA 330 IF KEY$(2,2)="S" THEN KEY$(2,2)="#
   "
SF 340 IF KEY$(2,2)="b" THEN KEY$(2,2)="F
   "
TU 350 KEYSIG$="0#1#2#3#4#5#6#7#0F1F2F3F4
   F5F6F7FXX"
VG 360 OFFSET$="00070209041106010005100030
   801061199"
CX 370 FOR K=1 TO 34 STEP 2
AA 380 IF KEY$(1,2)=KEYSIG$(K,K+1) OR KEY
   SIG$(K,K+1)="XX" THEN OFFSET1=VAL(OFFS
   ET$(K,K+1)):GOTO 400
HF 390 NEXT K
SC 400 IF OFFSET1=99 THEN ? " Please try
   again ... ":? :GOTO 300
LX 405 TRAP 410
YJ 410 ? :? "Enter the number of sharps o
   r flats   in the key signature you are
   "
TN 420 ? "transposing into."
EQ 430 ? "e.g. 2#, 2S, 2b, or 2F"
FB 440 INPUT KEY$
IF 450 IF KEY$(2,2)="S" THEN KEY$(2,2)="#
   "
SK 460 IF KEY$(2,2)="b" THEN KEY$(2,2)="F
   "
PU 465 TRAP OFF
ST 470 ? :? "      Working..."
CL 500 FOR K=1 TO 34 STEP 2
QS 510 IF KEY$(1,2)=KEYSIG$(K,K+1) OR KEY
   SIG$(K,K+1)="XX" THEN OFFSET2=VAL(OFFS
   ET$(K,K+1)):GOTO 530
GT 520 NEXT K
VB 530 IF OFFSET2=99 THEN ? " Please try
   again ...":GOTO 410
DP 540 OFFSET=OFFSET2-OFFSET1
DS 550 VOICE=1
LH 600 FOR Q=17 TO LEN(MU$) STEP 3
```

```
LA 610 IF ASC(MU$(Q,Q))>65 AND ASC(MU$(Q,
   Q))<255 THEN 680
RQ 620 IF MU$(Q,Q+2)="■■■" THEN VOICE=VOI
   CE+1:GOTO 670:REM INVERSE ESCAPE-CONTR
   OL-INSERT
RE 630 A=ASC(MU$(Q)):A=A+OFFSET
FY 640 IF A<0 THEN A=A+12
HO 650 IF A>64 THEN A=A-12
FU 660 Q$=CHR$(A):MU$(Q,Q)=Q$
GV 670 IF VOICE=5 THEN 700
JO 680 NEXT Q
RB 700 IF K<17 THEN MU$(Q+4,Q+4)="■":REM
   CONTROL COMMA
UM 710 IF K>16 THEN MU$(Q+4,Q+4)="■":REM
   CONTROL A
QY 720 B=VAL(KEY$(1,1))
QV 730 MU$(Q+5,Q+5)=CHR$(B)
NJ 735 TRAP 800
CD 800 ? "■":? :? "ENTER THE FILENAME FOR
    THE TRANSPOSED SONG (INCLUDE DRIVE #)
              e.g. D:NEWKEY.EXT"
LX 810 ? "     ";:INPUT FN$
LI 820 CLOSE #1
ON 830 ? :? "    Saving... ";FN$
AZ 840 OPEN #1,8,0,FN$
DQ 850 PRINT #1;MU$
LQ 860 CLOSE #1
AT 900 ? :? "TO MAKE A BACKUP DISK OF THE
          TRANSPOSED SONG, ENTER THE D
   RIVE #     AND FILENAME."
UG 910 ? "e.g. D2:FILENAME.EXT":? :? "IF
   NO BACKUP IS DESIRED, ENTER AN N."
NR 915 TRAP 900
MA 920 ? "     ";:INPUT FN$
BY 930 IF FN$="N" THEN 990
LN 940 CLOSE #1
OS 950 ? :? "    Saving... ";FN$
BE 960 OPEN #1,8,0,FN$
DV 970 PRINT #1;MU$
LV 980 CLOSE #1
QD 985 TRAP OFF
WK 990 ? :? "                  FINISHED"
EN 1000 END
```

LISTING 2

```
ML 10 REM MUSIC OCTAVE SHIFTER
LZ 20 REM BY JOE CABUK
LJ 25 REM (c)1990, ANTIC PUBLISHING, INC.
AJ 30 REM FOR ANTIC MUSIC PROCESSOR
MD 40 REM FROM ANTIC, JUNE 89 & DEC 88
FE 50 OFF=40000
AQ 60 DIM FN$(15),MU$(29000),AN$(1),Q$(1)
ZJ 100 ? :? "■ ANTIC MUSIC PROCESSOR OCTA
   VE SHIFTER"
KQ 105 TRAP 110
TC 110 ? :? "        Enter Source Song File
   Name          (Include Drive #)"
XK 120 ? :? "      e.g. D2:MYSONG.EXT
                  ";:INPUT FN$
WL 130 ? :? "   Loading... ";FN$
LF 140 CLOSE #1
YU 150 OPEN #1,4,0,FN$
LT 160 TRAP 230
FQ 170 I=0
CH 180 GET #1,A
QS 190 I=I+1
CY 200 MU$(I)=CHR$(A):REM READ THE SONG I
   NTO THE STRING MU$
OT 210 GOTO 180
CM 229 REM GET ERROR NUMBER
IC 230 ERR=PEEK(195)
IH 240 IF ERR=136 THEN 260:REM END-OF-FIL
   E ERROR ALLOWS CONTINUATION
HK 250 ? "ERROR NUMBER ";ERR;" HAS OCCURR
   ED":CLOSE #1:STOP :REM OTHER ERRORS ST
   OP EXECUTION
LK 260 CLOSE #1
LM 265 TRAP 300
CT 300 ? :? "Do you want the song shifted
             ■Up or ■Down?
             (Type ■U■ or ■D■ ■RETURN■)"
KV 310 INPUT AN$
DJ 320 IF AN$(1,1)="U" THEN OFFSET=12:GOT
   O 340
LF 325 TRAP 300
VX 330 IF AN$(1,1)="D" THEN OFFSET=-12:GO
   TO 340
MX 335 GOTO 300
SM 340 ? :? "         Working..."
DS 550 VOICE=1
LH 600 FOR Q=17 TO LEN(MU$) STEP 3
LA 610 IF ASC(MU$(Q,Q))>65 AND ASC(MU$(Q,
   Q))<255 THEN 680
RQ 620 IF MU$(Q,Q+2)="■■■" THEN VOICE=VOI
   CE+1:GOTO 670:REM INVERSE ESCAPE-CONTR
   OL-INSERT
RE 630 A=ASC(MU$(Q)):A=A+OFFSET
FY 640 IF A<0 THEN A=A+12
HO 650 IF A>64 THEN A=A-12
FU 660 Q$=CHR$(A):MU$(Q,Q)=Q$
HQ 670 IF VOICE=5 THEN 800
JO 680 NEXT Q
NJ 735 TRAP 800
HJ 800 ? "■":? :? "ENTER THE FILENAME FOR
    THE SHIFTED      SONG (INCLUDE DRIVE #)
                 e.g. D:NEWKEY.EXT"
LX 810 ? "     ";:INPUT FN$
LI 820 CLOSE #1
ON 830 ? :? "    Saving... ";FN$
AZ 840 OPEN #1,8,0,FN$
DQ 850 PRINT #1;MU$
LQ 860 CLOSE #1
RM 900 ? :? "TO MAKE A BACKUP DISK OF THE
          SHIFTED SONG, ENTER THE DRIV
   E #        AND FILENAME."
UG 910 ? "e.g. D2:FILENAME.EXT":? :? "IF
   NO BACKUP IS DESIRED, ENTER AN N."
NR 915 TRAP 900
MA 920 ? "     ";:INPUT FN$
BY 930 IF FN$="N" THEN 990
LN 940 CLOSE #1
OS 950 ? :? "    Saving... ";FN$
BE 960 OPEN #1,8,0,FN$
DV 970 PRINT #1;MU$
LV 980 CLOSE #1
QD 985 TRAP OFF
WK 990 ? :? "                  FINISHED"
EN 1000 END
```

SPACE STATION MULTIPLICATION

HEAD FOR OUTER SPACE TO BRUSH UP ON YOUR TIMES TABLES

Article on page 13

LISTING 1

Don't type the TYPO II Codes!

```
KO 5 REM SPACE STATION MULTIPLICATION
PW 7 REM BY BOB FOLLETT
YU 9 REM (c)1990, ANTIC PUBLISHING, INC.
LH 40 POKE 559,0:GOTO 9000
```

```
TA 45 REM TIMER/KEYBOARD
RU 50 N=PEEK(764):PLOT B,181:PLOT B,182:B
   =B+C:IF N=255 THEN 50
PG 60 POKE 764,255:POKE 53279,0:D(X)=KEY(
   N):X=X+4
KQ 70 ON KEY(N) GOTO 95,150,250,350,450,5
   50,650,750,850,950,1050,1100,1200,2400

BL 80 REM ZERO
XS 90 PLOT X,Y:DRAWTO X+2,Y:DRAWTO X+2,Y+
   9:DRAWTO X,Y+9:DRAWTO X,Y:PLOT X+1,Y+1
   :PLOT X+1,Y+8:RETURN
QV 95 PLOT X,Y:DRAWTO X+2,Y:DRAWTO X+2,Y+
   8:DRAWTO X,Y+8:DRAWTO X,Y:GOTO 50
NI 99 REM ONE
ZX 100 PLOT X,Y+2:PLOT X,Y+1:PLOT X+1,Y:D
   RAWTO X+1,Y+9:PLOT X,Y+8:PLOT X,Y+9:PL
   OT X+2,Y+8:PLOT X+2,Y+9:RETURN
PN 150 PLOT X,Y+1:PLOT X+1,Y:DRAWTO X+1,Y
   +8:PLOT X,Y+8:PLOT X+2,Y+8:GOTO 50
KR 190 REM TWO
OQ 200 PLOT X,Y:DRAWTO X+2,Y:DRAWTO X+2,Y
   +5:DRAWTO X,Y+4:DRAWTO X,Y+8:DRAWTO X+
   2,Y+8:PLOT X,Y+1:PLOT X+1,Y+1
SG 210 PLOT X+1,Y+5:PLOT X,Y+9:DRAWTO X+2
   ,Y+9:RETURN
TO 250 PLOT X,Y:DRAWTO X+2,Y:DRAWTO X+2,Y
   +4:DRAWTO X,Y+4:DRAWTO X,Y+8:DRAWTO X+
   2,Y+8:GOTO 50
NQ 290 REM THREE
JG 300 PLOT X,Y:DRAWTO X+2,Y:DRAWTO X+2,Y
   +9:DRAWTO X,Y+9:PLOT X,Y+8:PLOT X+1,Y+
   8:PLOT X,Y+4:PLOT X+1,Y+4
RX 310 PLOT X,Y+5:PLOT X+1,Y+5:PLOT X+1,Y
   +1:PLOT X,Y+1:RETURN
XK 350 PLOT X,Y:DRAWTO X+2,Y:DRAWTO X+2,Y
   +8:DRAWTO X,Y+8:PLOT X,Y+4:PLOT X+1,Y+
   4:GOTO 50
YH 390 REM FOUR
OQ 400 PLOT X,Y:DRAWTO X,Y+4:DRAWTO X+2,Y
   +4:DRAWTO X+2,Y:DRAWTO X+2,Y+9:PLOT X,
   Y+5:PLOT X+1,Y+5:RETURN
NM 450 PLOT X,Y:DRAWTO X,Y+4:DRAWTO X+2,Y
   +4:PLOT X+2,Y:DRAWTO X+2,Y+8:GOTO 50
QL 490 REM FIVE
ZT 500 PLOT X+2,Y:DRAWTO X,Y:DRAWTO X,Y+5
   :DRAWTO X+2,Y+4:DRAWTO X+2,Y+9:DRAWTO
   X,Y+9:PLOT X+1,Y+1:PLOT X+2,Y+1
XX 510 PLOT X+1,Y+8:PLOT X+1,Y+5:PLOT X,Y
   +8:RETURN
OI 550 PLOT X+2,Y:DRAWTO X,Y:DRAWTO X,Y+4
   :DRAWTO X+2,Y+4:DRAWTO X+2,Y+8:DRAWTO
   X,Y+8:GOTO 50
IX 590 REM SIX
SP 600 PLOT X,Y:DRAWTO X,Y+9:DRAWTO X+2,Y
   +9:DRAWTO X+2,Y+4:PLOT X+1,Y+5:PLOT X+
   1,Y+8:PLOT X+1,Y+4:RETURN
TU 650 PLOT X,Y:DRAWTO X,Y+8:DRAWTO X+2,Y
   +8:DRAWTO X+2,Y+4:PLOT X+1,Y+4:GOTO 50

SM 690 REM SEVEN
ZH 700 PLOT X,Y:DRAWTO X+2,Y:DRAWTO X+2,Y
   +9:PLOT X,Y+1:PLOT X+1,Y+1:RETURN
NP 750 PLOT X,Y:DRAWTO X+2,Y:DRAWTO X+2,Y
   +8:GOTO 50
NG 790 REM EIGHT
VP 800 PLOT X,Y:DRAWTO X+2,Y:DRAWTO X+2,Y
   +9:DRAWTO X,Y+9:DRAWTO X,Y:PLOT X+1,Y+
   1:PLOT X+1,Y+4:PLOT X+1,Y+5
AD 810 PLOT X+1,Y+8:RETURN
RI 850 PLOT X,Y:DRAWTO X+2,Y:DRAWTO X+2,Y
   +8:DRAWTO X,Y+8:DRAWTO X,Y:PLOT X+1,Y+
   4:GOTO 50
PZ 890 REM NINE
IQ 900 PLOT X+2,Y+9:DRAWTO X+2,Y:DRAWTO X
   ,Y:DRAWTO X,Y+5:PLOT X+1,Y+1:PLOT X+1,
   Y+4:PLOT X+1,Y+5:RETURN
BD 950 PLOT X+2,Y+8:DRAWTO X+2,Y:DRAWTO X
   ,Y:DRAWTO X,Y+4:PLOT X+1,Y+4:GOTO 50
DQ 990 REM TEN
GA 1000 PLOT X-2,Y:DRAWTO X-2,Y+9:GOTO 90

GQ 1005 REM ELEVEN
EC 1010 PLOT X-1,Y:DRAWTO X-1,Y+9:PLOT X+
   1,Y:DRAWTO X+1,Y+9:RETURN
QD 1015 REM TWELVE
QH 1020 PLOT X-2,Y:DRAWTO X-2,Y+9:GOTO 20
   0
VU 1040 REM RETURN
BK 1050 ANS$=STR$(ANS):IF LEN(ANS$)<>(X-X
   S)/4 THEN 1400
GN 1060 X=X-4:FOR I=LEN(ANS$) TO 1 STEP -
   1:X=X-4:IF D(X)-1=VAL(ANS$(I,I)) THEN
   NEXT I:GOTO 1450
JV 1065 POP :GOTO 1400
CO 1099 REM DELETE
ZU 1100 IF X=XS THEN 1200
BJ 1105 COLOR 7:X=X-8
IM 1110 PLOT X+4,Y:DRAWTO X+4,Y+8:PLOT X+
   5,Y:DRAWTO X+5,Y+8:PLOT X+6,Y:DRAWTO X
   +6,Y+8:COLOR 8:GOTO 50
IG 1190 REM INVALID KEY
VP 1200 SOUND 0,230,10,8:PLOT B,181:PLOT
   B,182:X=X-4:B=B+C:SOUND 0,0,0,0:GOTO 5
   0
VZ 1290 REM ERRORS
BW 1300 TRAP 1300:IF B>79 THEN 1400
PX 1310 X=X+4:IF KEY(N)=12 THEN 1100
OY 1320 IF KEY(N)=11 THEN 1050
ZA 1330 IF KEY(N)<>14 THEN 1200
PN 1340 GOTO 2400
LO 1390 REM WRONG ANSWER
GI 1400 SOUND 0,78,12,8:W=W+1:WRONG(W,1)=
   R+1:WRONG(W,2)=D2:GOSUB 1800:GOTO 1600

QL 1440 REM CORRECT ANSWER
VS 1450 COR=COR+1:SOUND 0,18,10,8:X=BROW(
   COR):Y=167:ON COR GOSUB 100,200,300,40
   0,500,600,700,800,900,1000,1010,1020
XW 1460 GOSUB 1800:GOTO 1600
ZZ 1490 REM SETUP PROBLEMS
CI 1500 TRAP 1300:GOSUB 9400
XH 1530 FOR I=1 TO 12:D(I)=I:NEXT I:T=12
NE 1600 B=1:C=SKILL(COL/2):X=33:Y=38:COLO
   R 6:R=ROW-2:IF ROW=14 THEN R=INT(RND(0
   )*11)+1
ZZ 1610 IF T=0 THEN 3000
PZ 1620 POKE 764,255:IF R>8 THEN X=34
CI 1630 ON R GOSUB 200,300,400,500,600,70
   0,800,900,1000,1010,1020
YL 1640 X=38:Y=38:PLOT X,Y:DRAWTO X+2,Y+9
   :PLOT X+2,Y:DRAWTO X,Y+9
RQ 1645 X=43:N2=INT(RND(0)*T)+1:D2=D(N2):
   D(N2)=D(T):IF COL<8 THEN D2=13-T
UK 1650 T=T-1:ANS=(R+1)*D2:IF D2>9 THEN X
   =44
JH 1660 XS=36:IF ANS>99 THEN XS=34
ZY 1670 IF ANS<10 THEN XS=38
EQ 1690 ON D2 GOSUB 100,200,300,400,500,6
   00,700,800,900,1000,1010,1020
ZF 1700 X=XS-4:Y=153:COLOR 8:PLOT 0,180:D
   RAWTO 0,183:GOTO 50
RH 1790 REM ERASE DISPLAYS
LA 1800 COLOR 1:FOR I=38 TO 47:PLOT 32,I:
   DRAWTO 46,I:NEXT I:COLOR 7
HN 1810 FOR I=153 TO 161:PLOT 32,I:DRAWTO
    46,I:NEXT I:COLOR 2:PLOT 0,180:DRAWTO
    0,183:PLOT 1,181:DRAWTO 79,181
AI 1820 PLOT 1,182:DRAWTO 79,182:SOUND 0,
   0,0,0:RETURN
OL 1990 REM MENU SCREEN
HS 2000 ROW=3:COL=2:GOSUB 9300:POKE 708,1
   98:POKE 709,152:POKE 710,42:POKE 711,5
   0
KS 2020 ? #6;"          select"
YW 2030 ? #6;"multiplication table"
QE 2040 ? #6;"           2  "
FS 2050 FOR Y=4 TO 13:POSITION 9,Y:? #6;Y
   -1:NEXT Y:Y=19
FN 2060 ? #6;"           MIX"
QL 2070 POSITION 1,17:? #6;"option skill
   level"
DY 2080 POSITION 2,19:? #6;"1 2 3 4 5 6 7
    8 9";
LG 2090 POSITION 3,23:? #6;"start to begi
   n":ROW=3:COL=2:N=220:GOTO 2100
KZ 2095 POSITION 3,23:? #6;"START":POP
HN 2096 POSITION 3,23:? #6;"start"
QH 2100 Q=PEEK(53279):ON Q GOSUB 2095,209
   5,2300,2095,2200,1500,2095
DY 2150 FOR I=1 TO 24:IF PEEK(53279)<>Q T
   HEN POP :GOTO 2100
FK 2160 NEXT I
JK 2170 Q2=PEEK(53279):IF Q=Q2 THEN POKE
   77,0:ON Q GOSUB 2170,2170,2300,2170,22
   00,1500,2170:GOTO 2170
OM 2180 GOTO 2100
```

```
DB 2190 REM SELECT TABLE
LI 2200 FOR X=9 TO 11:LOCATE X,ROW,CH:POK
   E 85,X:? #6;CHR$(CH-128):NEXT X:ROW=RO
   W+1:IF ROW=15 THEN ROW=3
MV 2210 SOUND 0,N-(12*ROW),10,8
UX 2220 FOR X=9 TO 11:LOCATE X,ROW,CH:POK
   E 85,X:? #6;CHR$(CH+128);:NEXT X:SOUND
    0,0,0,0:RETURN
FZ 2290 REM OPTION SKILL
FB 2300 LOCATE COL,Y,CH:POSITION COL,Y:?
   #6;CHR$(CH-128):COL=COL+2:IF COL=20 TH
   EN COL=2
NQ 2310 LOCATE COL,Y,CH:POSITION COL,Y:?
   #6;CHR$(CH+128)
JW 2320 SOUND 0,N-(COL/2*16),10,8:FOR I=1
    TO 13:NEXT I:SOUND 0,0,0,0:RETURN
UR 2390 REM M KEY>MENU
VD 2400 GOSUB 1800:GOSUB 9900
LK 2450 W=0:COR=0:GOTO 2000
NL 2990 REM WRONG ANSWER SCREEN
VL 3000 FOR I=1 TO 80:NEXT I:GOSUB 9900
AI 3060 GOSUB 9300:POKE 708,88:POKE 709,3
   8:POKE 710,26:POKE 711,50:POKE 712,4
KB 3065 IF COR=12 THEN 3150
SU 3070 IF COR<>11 THEN 3075
SR 3072 ? #6;"  answer to wrong          p
   roblem":GOTO 3078
GN 3075 ? #6;"  answers to wrong         p
   roblems"
EW 3078 ? #6;"■■■■■■■■■■■■■■■■■■■■":IF CO
   RRECT<7 THEN POKE 84,3
ED 3080 FOR I=1 TO 12-COR:POKE 85,5-LEN(S
   TR$(WRONG(I,1))):? #6;WRONG(I,1);
NF 3090 POKE 85,6:? #6;"X ";WRONG(I,2);:P
   OKE 85,11:? #6;"=";:POKE 85,13:? #6;WR
   ONG(I,1)*WRONG(I,2)
YV 3095 IF COR>2 THEN ? #6;"■■■■■■■■■■■■■
   ■■■■■■■":IF COR<7 THEN POKE 84,PEEK(84
   )-1
RN 3098 NEXT I:IF COR<3 THEN ? #6;"■■■■■■
   ■■■■■■■■■■■■■■"
BH 3099 IF COR>3 THEN ? #6
YF 3100 ? #6;"  start to continue "
ZW 3105 ? #6;"    option for menu"
HP 3110 IF COR=12 THEN X=PEEK(708):POKE 7
   08,PEEK(710):POKE 710,X
LH 3120 FOR I=1 TO 12:X=PEEK(53279):IF X=
   6 OR X=3 THEN POP :GOTO 3200
LM 3130 NEXT I:GOTO 3110
JS 3150 FOR X=0 TO 20 STEP 4:POKE 84,X:?
   #6;"_■_■_■_■_■_■_■_■_■_■":? #6;"■_■_■_
   ■_■_■_■_■_■_■_":NEXT X
AO 3170 POSITION 5,5:? #6;" EXCELLENT ":P
   OKE 84,11:GOTO 3100
HF 3200 IF X=6 THEN 3500
RW 3202 GOTO 2450
ZB 3290 REM LIGHT SHOW
QV 3500 GOSUB 9400:IF COR<8 THEN FOR I=1
   TO 150:NEXT I:GOTO 2450
XH 3510 CH=1:N=4
JG 3530 FOR I=1 TO 16:IF COR<9 THEN 3560
YA 3540 IF CH=1 THEN POKE 711,66:POKE 712
   ,24:CH=0:GOTO 3560
OM 3550 POKE 711,24:POKE 712,66:CH=1
VI 3560 FOR X=1 TO 14:COLOR N:PLOT STAR(X
   ,1),STAR(X,2):N=N+1:IF N=10 THEN N=4
HM 3562 NEXT X:NEXT I:COLOR 3:FOR I=1 TO
   14:PLOT STAR(I,1),STAR(I,2):NEXT I
SA 3565 IF COR<11 THEN FOR I=1 TO 100:NEX
   T I:GOTO 2450
WU 3570 FOR X=0 TO 255 STEP 2:SOUND 0,X/2
   ,10,8:POKE 704,X:SOUND 0,X,10,8:NEXT X
FC 3580 FOR X=255 TO 0 STEP -2:SOUND 0,X/
   2,10,8:POKE 704,X:SOUND 0,X,10,8:NEXT
   X:SOUND 0,0,0,0
GN 3590 IF COR=12 THEN COR=0:GOTO 3570
VM 3600 FOR I=1 TO 150:NEXT I:GOTO 2450
LP 8990 REM INITIALIZE
EV 9000 DIM ANS$(3),D(40),SKILL(9),KEY(25
   5),WRONG(12,2),STAR(14,2),BROW(12)
AK 9020 GRAPHICS 2+16:POKE 84,1
YF 9030 ? #6;"    SPACE STATION-     MULT
   IPLICATION":? #6;"  _■_■_■_■_■_■_■_■_■"
KZ 9035 POKE 84,5:? #6;"   PROGRAM BY:":
   ? #6;"    bob follett":POKE 84,7
KP 9040 ? #6;"  _■_■_■_■_■_■_■_■_■■":? #6;
   "    ANTIC (C) 1990    ":? #6;"    -one
   moment-"
BS 9060 FOR I=1 TO 9:READ X:SKILL(I)=X:NE
   XT I
CZ 9070 DATA .1,.125,.16,.25,.3,.45,.6,.8
   ,1
KS 9080 FOR I=1 TO 12:READ X:BROW(I)=X:NE
   XT I
KQ 9090 DATA 3,9,15,21,27,33,39,45,51,59,
   66,73
XK 9100 FOR I=0 TO 255:KEY(I)=13:NEXT I
WJ 9110 FOR I=1 TO 12:READ N:KEY(N)=I:NEX
   T I:KEY(37)=14
YH 9115 DATA 50,31,30,26,24,29,27,51,53,4
   8,12,52
QZ 9120 FOR I=1 TO 14:READ X,X2:STAR(I,1)
   =X:STAR(I,2)=X2:NEXT I
HO 9130 DATA 61,77,50,137,7,124,21,13,58,
   16,44,9,38,125,72,131,42,73,22,134,33,
   88,58,115,12,91,19,109
AW 9250 POKE 729,0:PAGE=PEEK(106):POKE 10
   6,PAGE-16:GRAPHICS 10:POKE 559,0:GOTO
   9620
KL 9290 REM SCREEN CALLS
BH 9300 POKE 106,PAGE:GRAPHICS 17:GOTO 95
   00
YE 9400 POKE 106,PAGE-16:POKE 704,0:POKE
   705,2:POKE 706,4:POKE 707,6
IU 9410 GRAPHICS 42:POKE 708,8:POKE 709,1
   0:POKE 710,12:POKE 711,24:POKE 712,66
LF 9490 REM DISABLE BREAK KEY
IT 9500 POKE 16,64:POKE 53774,64:RETURN
FM 9600 REM DRAW SPACESHIP
BD 9620 COLOR 8:FOR I=1 TO 4:PLOT 39-I,I+
   17:DRAWTO 38+I,I+17:NEXT I
FY 9630 FOR I=1 TO 14:COLOR I/2:PLOT 30-I
   *2,21+I:DRAWTO 48+I*2,21+I:NEXT I
XO 9640 COLOR 3:FOR I=36 TO 49:PLOT 2,I:D
   RAWTO 76,I:NEXT I
JJ 9650 COLOR 1:FOR I=37 TO 48:PLOT 31,I:
   DRAWTO 47,I:NEXT I
XS 9660 COLOR 8:COL=2:FOR I=1 TO 3:FOR RO
   W=38 TO 47:PLOT COL,ROW:DRAWTO COL+3,R
   OW
MJ 9670 PLOT 75-COL,ROW:DRAWTO 78-COL,ROW
   :NEXT ROW:COL=COL+12:NEXT I
AL 9680 COLOR 7:COL=8:FOR I=1 TO 2:FOR RO
   W=38 TO 47:PLOT COL,ROW:DRAWTO COL+3,R
   OW
MP 9690 PLOT 75-COL,ROW:DRAWTO 78-COL,ROW
   :NEXT ROW:COL=COL+12:NEXT I
OG 9730 ROW=49:FOR I=14 TO 4 STEP -1:COLO
   R I/2:ROW=ROW+1:PLOT 30-I*2,ROW:DRAWTO
    48+I*2,ROW:NEXT I
NK 9740 X=1:FOR I=6 TO 1 STEP -1:FOR J=I
   TO 1 STEP -1:COLOR X:PLOT 39-J*2,67-I:
   PLOT 39-J*2+1,67-I:X=X+1:NEXT J
NI 9742 X=1:NEXT I
WV 9745 X=1:FOR I=6 TO 1 STEP -1:FOR J=I
   TO 1 STEP -1:COLOR X:PLOT 38+J*2,67-I:
   PLOT 38+J*2+1,67-I:X=X+1:NEXT J
JZ 9748 X=1:NEXT I:FOR I=1 TO 6:COLOR I:P
   LOT 39,67-I:NEXT I
NS 9750 COL=1:FOR I=148 TO 165:COLOR COL:
   PLOT 0,I:DRAWTO 79,I:COL=COL+1:IF COL=
   7 THEN COL=1
GE 9751 NEXT I
VL 9752 COLOR 3:FOR I=166 TO 177:PLOT 0,I
   :DRAWTO 79,I:NEXT I
GC 9760 GOSUB 9900
WG 9770 COLOR 2:FOR I=178 TO 185:PLOT 0,I
   :DRAWTO 79,I:NEXT I
AV 9800 COLOR 4:FOR I=1 TO 14:PLOT STAR(I
   ,1),STAR(I,2):NEXT I
ZQ 9820 COLOR 7:FOR I=152 TO 162:PLOT 31,
   I:DRAWTO 47,I:NEXT I
VO 9830 COLOR 2:PLOT 30,151:DRAWTO 48,151
   :DRAWTO 48,163:DRAWTO 30,163:DRAWTO 30
   ,151
TI 9840 PLOT 0,185:DRAWTO 0,0:DRAWTO 79,0
   :DRAWTO 79,185
OM 9850 GOTO 2000
ML 9890 REM CLEAR NUMBERS
LH 9900 COLOR 1:Y=167:FOR I=1 TO 12:X=BRO
   W(I):ON I GOSUB 100,200,300,400,500,60
   0,700,800,900,1000,1010,1020:NEXT I
BC 9910 RETURN
```

COLLAPSING DECK

SOLITAIRE GAME THAT'S SIMPLE TO PLAY, BUT TOUGH TO WIN

Article on page 15

LISTING 1

Don't type the TYPO II Codes!

```
RI 100 REM ************************
CL 110 REM *  COLLAPSING  DECK  *
ED 120 REM *   BY A. R. MILLER  *
RQ 140 REM ************************
YJ 150 REM (c)1990, ANTIC PUBLISHING,INC.

LG 160 REM TITLE PAGE
JT 170 GRAPHICS 1+16:POSITION 1,4:? #6;"*******************"
MT 180 POSITION 1,5:? #6;"* COLLAPSING DECK *"
TG 190 POSITION 1,6:? #6;"*   a. r. miller  *"
CC 200 POSITION 1,7:? #6;"*       1989      *"
CS 210 POSITION 1,8:? #6;"*******************"
LJ 220 REM SET UP
JG 230 DIM DK(54),CD(4,13),PT(2,56),F$(4),V$(26),L$(2):OPEN #1,4,0,"K:"
GF 240 F$="♠♥♦♣":V$="A 2 3 4 5 6 7 8 9 10J Q K "
RM 250 REM SET UP POINTERS
BU 260 I=1:FOR Y=4 TO 16 STEP 2:FOR X=0 TO 35 STEP 5:PT(1,I)=X:PT(2,I)=Y:I=I+1:NEXT X:NEXT Y
QN 270 REM SHUFFLE DECK
KI 280 FOR I=1 TO 53:DK(I)=0:NEXT I:GRAPHICS 1+16:POSITION 3,6:? #6;"SHUFFLING DECK"
FL 290 FOR X=1 TO 4:FOR Y=1 TO 13:CD(X,Y)=0:NEXT Y:NEXT X
UH 300 FOR I=1 TO 52
UY 310 X=INT(RND(0)*4+0.5):Y=INT(RND(0)*13+0 5):IF CD(X,Y) THEN 310
EC 320 IF X<1 OR X>4 THEN 310
GF 330 IF Y<1 OR Y>13 THEN 310
XN 340 CD(X,Y)=1:DK(I)=X*100+Y:NEXT I:KC=2:KP=2:ED=52
GL 350 REM MAIN PRINTING LOOP
WS 360 GRAPHICS 0:POSITION 0,1:? "**********COLLAPSING  DECK************";
RX 370 POSITION 0,19:? "..............COMMANDS..............";
JP 380 POSITION 1,20:? "1 BACK ONE";:POSITION 1,21:? "3 BACK THREE";
GU 390 POSITION 15,20:? "N NEXT CARD";:POSITION 15,21:? "A ALL CARDS";
HU 400 POSITION 1,22:? "E END GAME";:POSITION 15,22:? "L MOVE TO END"
LH 410 POSITION 1,23:? "< MOVE LEFT";:POSITION 15,23:? "> MOVE RIGHT"
AT 420 POSITION 32,20:? "CARDS":POSITION 32,21:? "LEFT":POSITION 33,22:? ED-KC
UX 430 FOR I=1 TO KC:F=INT(DK(I)/100):V=(DK(I)-F*100)
PO 440 POSITION PT(1,I),PT(2,I):? F$(F,F);V$(2*V-1,2*V);:NEXT I
IQ 450 POSITION PT(1,KP)+1,PT(2,KP)+1:? "^";:POKE 752,1
QB 460 GET #1,Z:REM DO WHAT?
NT 470 IF Z=49 THEN 570:REM BACK ONE CARD
SU 480 IF Z=51 THEN 660:REM BACK THREE CARDS
DN 490 IF Z=78 OR Z=110 THEN 860:REM NEXT CARD
KN 500 IF Z=65 OR Z=97 THEN 890:REM ALL CARDS
OV 510 IF Z=69 OR Z=101 THEN 920:REM END GAME
EU 520 IF Z=76 OR Z=108 THEN 810:REM MOVE TO LAST CARD
CN 530 IF Z=60 THEN 740:REM MOVE LEFT
DK 540 IF Z=62 THEN 780:REM MOVE RIGHT
PP 550 FOR I=1 TO 30:SOUND 1,29,10,10:SOUND 1,243,10,10:NEXT I:SOUND 1,0,0,0:GOTO 460
UO 560 REM BACK ONE CARD
ZE 570 IF KP=1 THEN 550:REM YOU CANNOT DO THAT
PZ 580 F=INT(DK(KP)/100):V=DK(KP)-F*100:F1=INT(DK(KP-1)/100):V1=DK(KP-1)-F1*100
TD 590 IF F=F1 THEN 620
DO 600 IF V=V1 THEN 620
TF 610 GOTO 550:REM YOU CANNOT DO THAT
AU 620 FOR I=KP-1 TO ED-1:DK(I)=DK(I+1):NEXT I:KP=KP-1:KC=KC-1:ED=ED-1
PR 630 IF ED=1 THEN 920:REM GO TO END OF GAME
PB 640 GOTO 360
PC 650 REM BACK THREE CARDS
AA 660 IF KP<4 THEN 550:REM YOU CANNOT DO THAT
LZ 670 F=INT(DK(KP)/100):V=DK(KP)-F*100:F1=INT(DK(KP-3)/100):V1=DK(KP-3)-F1*100:IF F=F1 THEN 700
DK 680 IF V=V1 THEN 700
TV 690 GOTO 550:REM YOU CANNOT DO THAT
YV 700 DK(KP-3)=DK(KP):FOR I=KP TO ED-1:DK(I)=DK(I+1):NEXT I:DK(ED)=0:KP=KP-3:KC=KC-1:ED=ED-1
PO 710 IF ED=1 THEN 920:REM GO TO END OF GAME
OY 720 GOTO 360
HE 730 REM MOVE LEFT
ZA 740 IF KP=1 THEN 550:REM YOU CANNOT DO THAT
MZ 750 POSITION PT(1,KP)+1,PT(2,KP)+1:? " ";:SOUND 1,200,10,10:SOUND 1,0,0,0:KP=KP-1
TT 760 POSITION PT(1,KP)+1,PT(2,KP)+1:? "^";:SOUND 1,200,10,10:SOUND 1,0,0,0:GOTO 460
ER 770 REM MOVE RIGHT
CH 780 IF KP=KC THEN 550:REM YOU CANNOT DO THAT
HB 790 POSITION PT(1,KP)+1,PT(2,KP)+1:? " ";:SOUND 1,200,10,10:SOUND 1,0,0,0:KP=KP+1
TI 800 POSITION PT(1,KP)+1,PT(2,KP)+1:? "^";:SOUND 1,200,10,10:SOUND 1,0,0,0:GOTO 460
TZ 810 REM MOVE TO LAST CARD
FW 820 IF KP=KC THEN SOUND 1,200,10,10:SOUND 1,0,0,0:GOTO 460
QD 830 POSITION PT(1,KP)+1,PT(2,KP)+1:? " ";:SOUND 1,200,10,10:SOUND 1,0,0,0:KP=KC
TQ 840 POSITION PT(1,KP)+1,PT(2,KP)+1:? "^";:SOUND 1,200,10,10:SOUND 1,0,0,0:GOTO 460
NZ 850 REM NEXT CARD
VP 860 IF KC=ED THEN 550:REM YOU CANNOT DO THAT
NF 870 KC=KC+1:GOTO 360
XC 880 REM ALL CARDS
VV 890 IF KC=ED THEN 550:REM YOU CANNOT DO THAT
JE 900 KC=ED:GOTO 360
TV 910 REM END GAME
DJ 920 Z=0:FOR I=1 TO ED-1:F=INT(DK(I)/100):V=DK(I)-F*100:F1=INT(DK(I-1)/100):V1=DK(I-1)-F1*100
XV 930 IF F=F1 THEN 960
IZ 940 IF V=V1 THEN 960
RZ 950 GOTO 970
GO 960 Z=1:I=ED
UR 970 NEXT I:IF Z=1 THEN 1060
KA 980 IF E<4 THEN 1110:REM SKIP
HG 990 FOR I=1 TO ED-3
JF 1000 F=INT(DK(I)/100):V=DK(I)-F*100:F1=INT(DK(I-1)/100):V1=DK(I-1)-F1*100:IF F=F1 THEN 1030
JM 1010 IF V=V1 THEN 1030
OU 1020 GOTO 1040
KE 1030 Z=1:I=ED-2
FQ 1040 NEXT I:IF Z=1 THEN 1060
FQ 1050 GOTO 1110:REM FINAL SCORE
NU 1060 GRAPHICS 1+16:POSITION 3,4:? #6;"PLEASE RECHECK"
AT 1070 POSITION 5,5:? #6;"YOUR HAND":POS
```

```
   ITION 4,6:? #6;"I HAVE FOUND"
OI 1080 POSITION 2,7:? #6;"AT LEAST ONE M
   ORE":POSITION 7,8:? #6;"PLAY!!"
HG 1090 FOR I=1 TO 50:SOUND 1,99,10,10:SO
   UND 1,0,0,0:NEXT I:FOR QQ=1 TO 400:NEX
   T QQ:GOTO 360
TQ 1100 REM END OF GAME
NB 1110 GRAPHICS 1+16:POSITION 1,2:? #6;"
   YOU HAVE SUCCEEDED":POSITION 1,3:? #6;
   "COLLAPSING THE"
CB 1120 POSITION 4,4:? #6;"DECK DOWN TO":
   POSITION 9,5:? #6;ED:POSITION 7,6:? #6
   ;"CARDS"
CB 1130 IF ED=1 THEN POSITION 4,8:? #6;"n
   one better!":GOTO 1240
RM 1140 IF ED<3 THEN POSITION 5,8:? #6;"f
   antastic":GOTO 1240
AI 1150 IF ED<5 THEN POSITION 7,8:? #6;"g
   reat!":GOTO 1240
KS 1160 IF ED<7 THEN POSITION 4,8:? #6;"y
   ou're good":GOTO 1240
QC 1170 IF ED<9 THEN POSITION 6,8:? #6;"n
   ot bad":GOTO 1240
QS 1180 IF ED<11 THEN POSITION 0,8:? #6;"
   You've played before":GOTO 1240
HY 1190 IF ED<15 THEN POSITION 1,8:? #6;"
   you've got promise":GOTO 1240
IC 1200 IF ED<20 THEN POSITION 4,8:? #6;"
   keep trying":GOTO 1240
NW 1210 IF ED<25 THEN POSITION 7,8:? #6;"
   rookie!":GOTO 1240
PM 1220 IF ED<30 THEN POSITION 3,8:? #6;"
   are you sick?":GOTO 1240
RX 1230 POSITION 7,8:? #6;"novice!"
OZ 1240 FOR I=1 TO 300:NEXT I:POSITION 0,
   10:? #6;"DO YOU WANT TO PLAY":POSITION
    7,11:? #6;"AGAIN?";
GS 1250 POKE 752,1:GET #1,Z
JW 1260 IF Z=89 OR Z=121 THEN 280:REM YES

DN 1270 IF Z=78 OR Z=110 THEN POSITION 0,
   10:? #6;"you CAN'T STAND      ANOTHER C
   HALLENGE?":REM END
LY 1280 FOR I=1 TO 400:NEXT I:END
RE 1290 GOTO 1250
```

TECH TIPS

MACHINE LANGUAGE LOADER MENU

By Dennis Debro

I first encountered your MENU file when I bought the March 1989 issue with the disk enclosed. I liked the convenience of the menu, seeing all the files on disk, and being able to run a program from the menu. One thing I didn't like was not being able to run a machine language program without having to go to DOS and use the L option. (The instructions in the magazine generally tell you to rename the file AUTORUN.SYS, but the DOS option L works fine for *most* files ending with .OBJ or .EXE.)

This short alteration to the menu program will make it possible to execute machine language programs from the Antic Disk Menu. To work with the menu program, don't try to RUN the menu. Instead, at the BASIC READY prompt you must LOAD "D:MENU". Then you can change the lines as follows:

Don't type the TYPO II Codes!

```
SR 160 TRAP 200:POKE 83,39:POKE 82,2:FOR
   EXT=4 TO 12
BM 161 IF X$(EXT,EXT+3)=".EXE" OR X$(EXT,
   EXT+3)=".OBJ" THEN 215
KU 162 IF X$(EXT,EXT+3)=".BAS" THEN 164
CY 163 NEXT EXT
IS 164 RUN A$:TRAP 40000
RQ 215 CLOSE #1:OPEN #1,4,0,A$
TB 216 GRAPHICS 0
IX 217 START=USR(5576)
```

Be sure to SAVE the modified MENU program before you RUN it, or you will lose your work.

Lines 215-217 really do all the dirty work. Line 215 opens the file for input. Line 216 sets the screen back to the original white text on a blue screen. Line 217 executes DOS option L while in BASIC.

NOTE: As far as I know, this routine works only with Atari DOS. It will only work will .OBJ or .EXE files that have been properly designed to load from DOS and run with BASIC.

COMPUTER TYPIST DEMO

By Brandon Clark

This short but interesting subroutine shows how to print text onscreen character-by-character with a typewriter sound. This is the same effect you've probably seen in programs like HACKER.

When you RUN the program, instructions will write themselves out onto the screen. You can put up to 40 characters at a time into the string A$. Then GOSUB 1000 to print the characters onscreen, and move on to the text in the next A$.

If you want a different sound, just experiment with the SOUND statement in line 1030.

Don't type the TYPO II Codes!

```
TI 10 ? "[illegible]":DIM A$(40)
XX 20 REM  ADD LINES TO BE PRINTED HERE
FP 30 A$="This is an example of computer
   type":GOSUB 1000
QR 40 A$="as seen in some games and progr
   ams.":GOSUB 1000
XF 50 PRINT
PY 60 A$="Type LIST to see this program."
   :GOSUB 1000:A$="Delete lines 30-90 and
    add your own":GOSUB 1000
EJ 65 A$="text lines.":GOSUB 1000
XH 70 PRINT
PM 80 A$="Put your text (1-40 characters)
    in":GOSUB 1000
AW 90 A$="A$, and GOSUB 1000.":GOSUB 1000

AQ 99 PRINT :END
RQ 1000 REM  TYPE SUBROUTINE
YB 1010 PRINT :FOR Q=1 TO LEN(A$)
NA 1020 IF A$(Q,Q)=" " THEN FOR W=1 TO 10
   :NEXT W:? " ";:GOTO 1040
OU 1030 FOR W=20 TO 0 STEP -5:SOUND 0,W,4
   ,8:NEXT W:? A$(Q,Q);:SOUND 0,0,0,0
IL 1040 NEXT Q
AO 1050 RETURN
```

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